THE IRON AGE

Established 1855 New York, May 20, 1915 *Vol. 95 : No. 20*

Making Sprocket Chain without Waste

Locke Steel Belt Plant Embodies Some Unusual Effects—Fire Risk Eliminated—Use of Special Equipment and Combination Floor

The new plant of the Locke Steel Belt Company, Bridgeport, Conn., manufacturer of steel sprocket chain, was designed with two objects in view, the one to provide a wholly modern and strictly fireproof home for a thriving industry and permit of greatly increased floor space; the other—which is quite unusual—to symbolize in a sense, as the officers express it, the company's success in the development of its product in the 15 years it has been on the market. The determination was to create a plant that would be really worth while artistically. Various architects were employed and plan after plan was thrown aside before a satisfactory result was obtained. As an instance, half a score of designs were discarded before the marquee of the main entrance was accepted. The same painstaking care was exercised throughout the interior. The concrete walls and columns of the main factory room were given a finish which is usually deemed unnecessary. The same results so far as manufacturing and administration are concerned could have been obtained at a much less cost, but the unusual expenditure was not begrudged, for, as has been stated, an important factor was to make the building significant of the product turned out by the plant.

Fig. 1—General View of the Factory Showing the Testing Department with the Presses at the Far End

Various designs more or less ornate in character were passed by for the severely simple paneled exterior. The parapet is a duplicate of the curtain wall, so that when the time comes for adding a

Fig. 2—Front View of the New Plant of the Locke Steel Belt Company

second story the sill will be ready to receive the sashes. A double row of panes of cloudy factory glass along the tops of the windows affords another architectural touch, a curtain effect, this proportion having been chosen after much deliberation. The dulled glass prevents too great a glare from direct sunlight within the building and also throws the illumination to the more remote areas of the room. All in all, the structure presents a somewhat sharp contrast to most factories. The lines of the building in which is located the heat treating department follow those of the main structure.

The factory is located on Connecticut avenue, which is a link of the New York and Boston post-road, and adds another to a large community of great manufacturing plants, most of which have been built in the last few years. The main building is 270 ft. long and 60 ft. wide, the heat treating building 54 x 84 ft., and the storehouse 30 x 100 ft. The factory floor rests on the ground—which is necessary because of the great load of the heavy presses and of the chain in process and the finished material—with the exception of the space under the office at the front, and a small area at the rear. The basements are lighted by recessed windows. That at the rear extends beneath the loading platform, in the floor of which are openings that make easy the dumping of coal to the bunkers of the heating plant. Basement space provides for locker and toilet rooms and also storage facilities for the office. The main floor has no partition whatever, excepting that which separates the office from the factory. As already stated, the buildings are fireproof and the materials and products are, of course, noncombustible. The precaution was taken to have all equipment equally free from danger by fire, and the greatest care is taken that nothing of an inflammable nature be permitted within the buildings —not even an ordinary packing case. No fire hazard exists in neighboring structures. It is considered entirely unnecessary to carry fire insurance.

A siding from the main line of the New York, New Haven & Hartford Railroad provides for the delivery of material and the shipping of goods. The grouping of the presses and the storage of the finished chain are clearly shown in the views of the interior and also suggest the routing. The steel is converted into chain and in the process is coiled on reels which in turn are trundled, without the use of trucks, over a concrete way to the heat treating department, and then back into the main building to the testing department, which is hard by the space devoted to the storage of the finished article prior to its shipment.

The heat treating building is divided into two rooms, one for the hardening and the other for the tempering. The hardening furnaces, Fig. 7, are a

Fig. 4—One of the Presses Used in Manufacturing the Chain and the Reels for the Stock

Fig. 5—The Heat Treating Department Which Is Housed in a Separate Structure Conforming to the Main Building

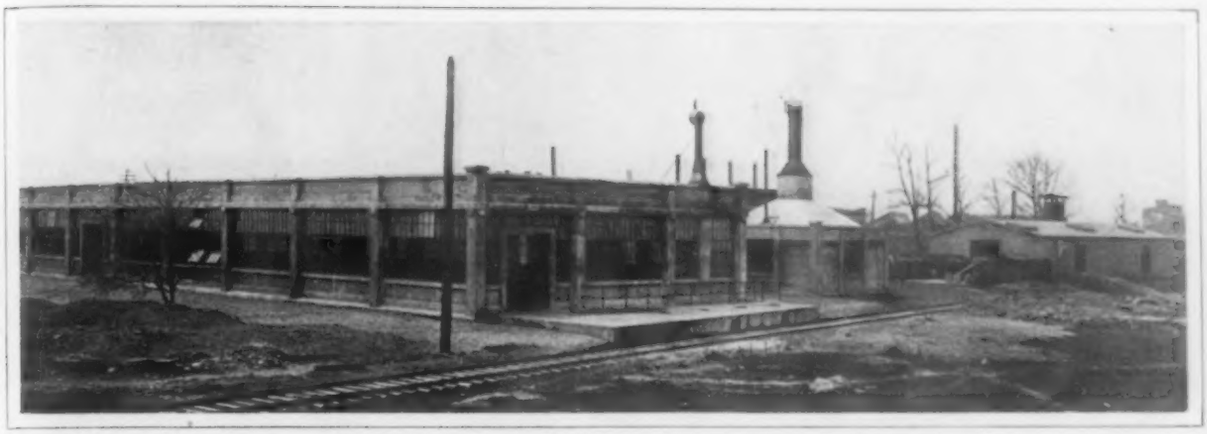


Fig. 3—Rear View Showing the Loading Platform and Heat Treating Building

new design by the company. As will be noticed, the construction is vertical, and the chain is fed in from top to bottom, the rate of feed through the flame being regulated by friction cone pulleys, of which there are three to each furnace. With this variable-speed arrangement different sizes of chain or chains of the same size requiring different temperatures may be hardened simultaneously, which is a common practice. The water tank at the floor end of the furnace is arranged so that it can be removed easily for cleaning or other purposes.

The oil tempering tanks in which the coils are treated are in an oven-like inclosure, Fig. 10, from which the fumes are carried through the hood to the revolving ventilator at the apex of the roof. In this process the residual oil on the chain is converted into an enamel surface.

In connection with this plant the company's system of manufacturing is of exceptional interest. This sprocket chain is especially adapted for use in such equipment as woodworking and textile machinery, conveying and elevating machinery, such as is employed in the handling of ore, coal, grain and similar material, and in agricultural machinery, including the great harvesting equipment of our Western States. The chain must be wholly trustworthy, for a break may mean serious financial loss. Therefore, the company's product must be made as perfectly as possible from the best of materials and must be subjected to rigid tests, even to the last link, before leaving the factory.

All steel is purchased from the mills by complete heats, which are made to a special analysis. With much of it the billets are hand chipped to remove imperfections before rolling into final form. This product is a heat treated steel averaging 230,000 lb. per sq. in. tensile strength. With all elements including phosphorus and sulphur under control by practically all good steel mills, and with the introduction of alloys no difficulty is experienced in obtaining reliable material. Each coil of each heat is carefully marked with the heat number, for future identification, and the invoices contain these numbers and the analysis. The Locke Company maintains a complete record of its product in relation to each heat and size of material on a special sheet, containing columns for recording all the necessary information regarding manufacture and tests. Each reel of chain, containing from 200 to 1200 ft., according to size, is tagged with the number of the machine on which it is made, the heat number, the date and the operator's name. This information is entered on the record sheet. Each length of chain made from a complete coil of steel is separated on the reel from adjoining lengths from other coils, and when the chain reaches the testing department links from each end are subjected to a breaking test, as a defect in the steel,

Fig. 6—The Specially Designed Workbench Used in the Locke Factory

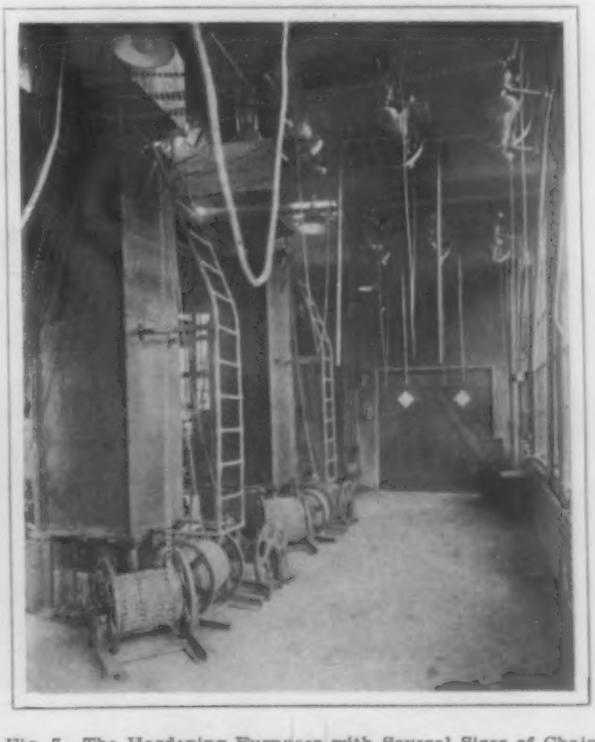


Fig. 7—The Hardening Furnaces with Several Sizes of Chain Passing Through the Flame Simultaneously

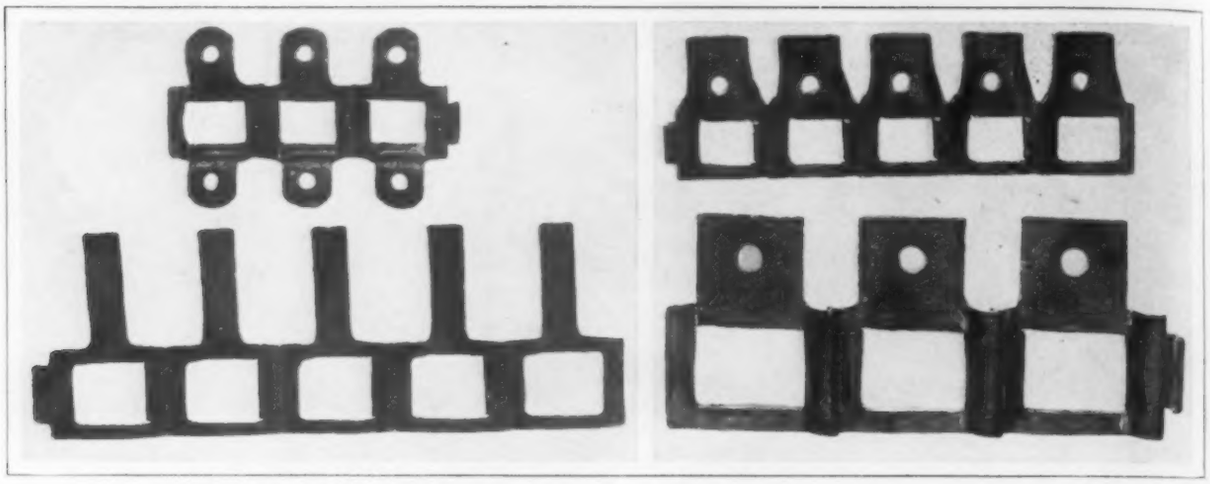


Fig. 8—Special Chains Which Are Manufactured with No Loss of Material

whether slight or running through the whole coil, is certain to reveal itself at the ends.

The first chain made from any new lot of steel is given a red tag to insure special care in handling and in testing through all operations. When a reel so marked reaches the furnace room very careful tests are made to ascertain the best temperatures for heat treating. Records are made and future material from the same heat is handled according to the practice indicated, and the treatment is constantly checked as the material passes through the works. All furnace room temperatures are checked by pyroscopes, pyrometers and thermometers, and by occasional physical tests of the treated chain. All chain is subjected to a static load on the testing bench, where it is also compared for length with a master chain. The elastic limit and ultimate strength are considered of vital importance, and frequent tests for these are made. As the chain is made in automatic machines, a gauge about 2 ft. long is applied frequently to insure the maintenance of accurate pitch; also small gauges are used to determine the interior diameter of the hook, the exterior diameter of the small end bar and other points of the link which insure its coupling qualities.

A description of one of the Locke presses which manufacture this chain was given in *The Iron Age*, May 12, 1904. In the interim the machine and its equipment have been developed in a somewhat revolutionary way. An idea of the modern machine may be obtained by a glance at Fig. 4. In the process the metal is converted into a perfect chain with no loss of material. That part of the strip which is punched to form the opening in the center of the link is curled back to constitute the hinge which connects with the link that precedes it. It is interesting that forms such as these are created from a steel high enough in carbon to permit of hardening.

The factory combines in its floor wooden blocks with concrete in a fashion which should be sug-

Fig. 9—View in the Section of the Factory Devoted to the Storage of Finished Material

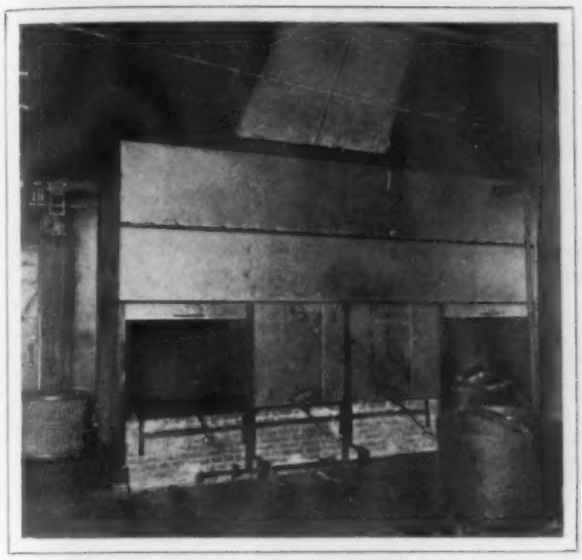


Fig. 10—The Oil Tempering Tanks Which Are Inclosed to Facilitate the Removal of Fumes and to Convert the Oil Into Enamel

gestive to manufacturers who contemplate erecting new works. The areas of concrete in the immediate vicinity of machinery and in other places where men are more or less constantly employed were laid with pockets, and these were filled with the blocks. The effects of the non-yielding surface of cement are well understood. Workmen suffer. The wooden block remedy seems an excellent one.

Philippine Iron-Ore Deposit

An iron-ore deposit in Surigao Province, Philippine Islands, distributed over an area of 62 square miles, and in some places reaching a depth of 100 ft., is reported by the bureau of science party sent to survey this field. The findings of H. F. Cameron, the engineer who first announced the existence of this bed, were confirmed in that the deposit was found to be singularly like the famous Mayari iron ores near Nipe Bay, Cuba, in its occurrence; that is, a great surface blanket of iron-bearing clay has resulted from the weathering and decomposition of the original rock. In the case of the Surigao ores, the parent rock is made up principally of serpentine.

The territory covered by the deposit is almost barren as compared with the tropical country surrounding it, and a considerable portion of the area is so eroded that the underlying parent rock is exposed. It was found on examination that the excessive rainfall of this region had carried away so much of the ore blanket that the first estimates of tonnage will have to be reduced. Excellent natural harbor facilities are near these mines and could easily be utilized should the analysis prove that the ore is of high grade. The Surigao Province is on the Pacific side of Mindanao Island, in the extreme southeastern part of the Philippine group.

The Miller Supply Company, Huntington, W. Va., has secured a contract from the Huntington Development & Gas Company, which includes the erection of three buildings, all steel. The main building will be 64 x 78 ft. 6 in.; an auxiliary building, 26 x 40 ft., and a pump house, 15 x 22 ft. The main building will house four horizontal tandem, double-acting, four-cylinder natural gas engines of about 500 hp. each, direct connected to double-acting single stage natural gas compressors. The auxiliary building will have two three-cylinder, 60-hp. vertical natural gas engines direct connected to generators and air compressors. The pump house will contain two 1000-gal. centrifugal pumps, direct motor driven. Construction will be rushed.

RECOVERY OF FLUE-DUST IRON

The Use of Molten Iron to Burn Out Coke, Limestone and Silica

Experiments have been conducted for a considerable time by Ralph Baggaley, Pittsburgh, in the treatment of blast furnace flue dust so as to recover its iron content. As described below by Mr. Baggaley the process is a simple one, but there has been no actual use of it at a blast furnace:

"We claim that the cost of treatment will not exceed $1 per ton. The recovery of values is complete and the cost of apparatus need not exceed $100. The process consists in passing molten iron from a ladle or from a mixer in an even stream through a small swirl basin and thence through a funnel 33 in. long, that extends from the bottom of the basin; at the same time an even stream of dry, screened flue dust is fed into the center of the swirl basin, through a pipe that has a refractory lip. This lip is submerged in the molten iron, so that there is no escape of dust into the air. Two tons of molten iron and 1000 lb. of dust can thus be passed through the basin and funnel per minute. A number of these basins can be used if desired. This produces a continuous, even burning out of the impurities in the dust, and its effect is totally different from pouring molten iron upon a mass of dust in a vessel or pouring a mass of dust upon a body of molten iron.

"During the passage all of the coke and limestone and a large proportion of the silica are burned out of the dust and the latter becomes a firm iron product that can be returned to the furnace and remelted and purified with a minimum of coke, much less than that required to smelt sintered or nodulized dust. The product analyzes from 82 to 84 per cent. iron and we estimate the cost of recovering all of the values in the dust and of remelting as being not over $1 per ton. We are told that the present cost of sintering, under favorable conditions, is 80 cents per ton. To this must be added the cost of smelting, say $1.25 per ton in large furnaces, or more in smaller ones. The investment in apparatus either to sinter or to nodulize is quite large."

Of a series of tests conducted at the foundry of the Seaman-Sleeth Company, Pittsburgh, the following are selected as representative results:

Test Made July 18, 1914

	Si.	S.	Mn.	Total carbon	P.	Iron
Analysis of molten iron before test	1.37	0.090	0.48	3.40	0.25	....
Analysis of molten iron after test	1.28	0.090	0.44	3.15	0.25	....
Analysis of product after test	2.54	0.092	0.54	2.83	0.25	82.00

Test Made August 5, 1914

	Si.	S.	Mn.	Total carbon	P.	Iron
Analysis of molten iron before test	0.86	0.085	0.36	3.58	0.22	....
Analysis of molten iron after test	0.80	0.078	0.32	3.51	0.20	....
Analysis of product after test	2.25	0.100	0.60	3.10 checked	0.28	84.00

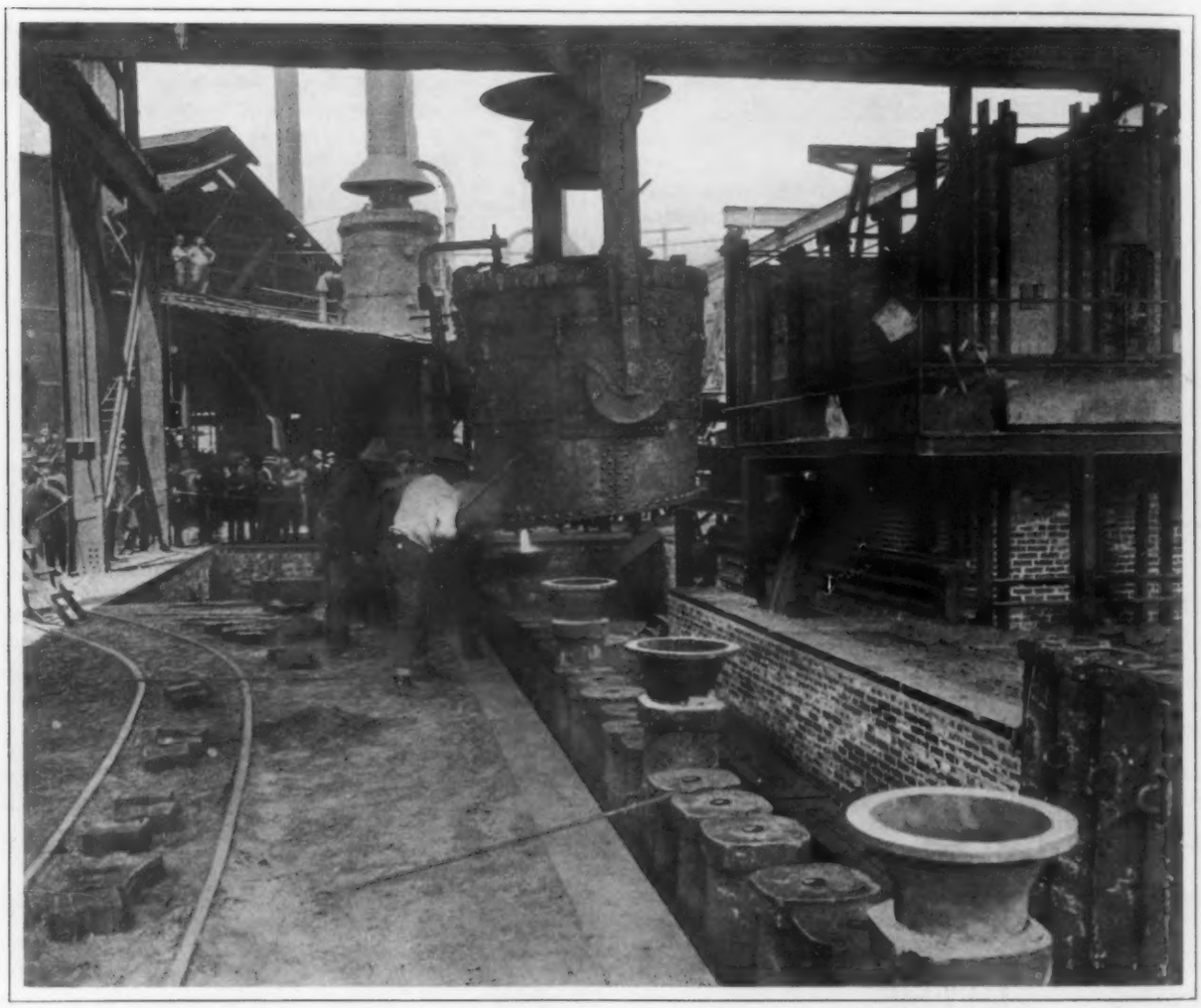
The inventor adds that "in every test the analysis of the iron showed that it had been slightly improved and in each the effect of the chemical reaction was distinctly heating." It is stated that with a funnel 33 in. long, 500 lb. of flue dust can be treated for a ton of iron. "The iron thus used is then restored in a treated and somewhat purified condition to the regular furnace output. Only enough molten iron would be diverted to treat the current production of flue dust in the proportions stated, unless stock piles of dust are also to be treated." Blue prints of the apparatus are available through Julian Kennedy, Bessemer Building, Pittsburgh, or the inventor, Ralph Baggaley, 1291 Shady avenue, Pittsburgh.

The Union Iron Works, San Francisco, closed a contract last week for a large oil steamer for the Union Oil Company. It will have Curtis turbine drive and oil-burning boilers.

A Steel Plant in Southern California

Oil-Burning Open-Hearth Furnace of 1500 Tons Monthly Capacity Now in Operation in Los Angeles—Ingots Bottom-Poured in Groups

Southern California has now an open-hearth steel plant. Besides this fact the plant is interesting in that crude oil is used as the fuel and bottom pouring of the ingots in groups is practiced. The furnace, so far one of 15 tons capacity comprising the plant, has been in operation since April 10, and is the property of the Southern California Iron & Steel Company, Los Angeles, which until recently was known as the California Industrial Company and operated iron rolling mills. It has discontinued operating the busheling furnaces for making iron products, but a noteworthy fact in this connection is that its pack-melting furnaces with slight modifications are being used as ingot-heating and billet-heating furnaces. The plant stands as an example of the change in product which a change in demand forces on the producer. Buyers, on the Pacific coast at least, have been insisting on open-hearth reinforcing bars, for example, as distinguished from rerolled bars.



Oil-burning Open-hearth Steel Furnace of the Southern California Iron & Steel Company, Los Angeles. The Steel Is Cast in 800-lb. Ingots in Groups of Seven with Bottom Pouring. The Steel Is Shown Entering the Higher or Middle Ingot Mold and Is Distributed Through Brick Runners to the Bottoms of the Three Molds Each Side. In the Pit May Be Seen the Iron Mold Holding the Runner Bricks for the Next Cast. As the Ingots Are Stripped the Molds Are Placed on the Base Mold in Readiness for Next Delivery of the Furnace. Note the Tops of the Ingot Molds

The works of the company has now a capacity of 1500 tons per month. Besides merchant sizes it turns out heavier bar stock and is a large producer of bolts and nuts as well as reinforcing bars. Perhaps 40 per cent. of the output of the mill goes into bolts and nuts. In rounds the range of sizes regularly made is ⅜ in. to 3 in.; in squares, ⅜ in. to 2½ in., and in flats ⅛ x ½ in. to 2 x 8 in. The company has secured Pacific coast rights for the Havemeyer reinforcing bar and plans to roll angles up to 3 in. and light channels. The manufacturing equipment includes, besides the rolling mills proper, numerous bolt and nut making machines. There is an extensive galvanizing department, which has both electrodeposition and hot galvanizing apparatus, the former including some of the machinery manufactured by the United States Electrogalvanizing Company, Brooklyn, N. Y. The plant is located near the center of Los Angeles, at Fourth and Mateo streets, and has direct shipping connections with the Santa Fé railroad system, with large storage yards for scrap and pig iron, and easy motor-truck shipping arrangements for city deliveries.

The open-hearth furnace has a 7 x 17-ft. hearth and three heats of 15 tons each are regularly taken

from it daily. The checker brickwork is built underneath and can be reached on all sides. The accompanying reproduction of a photograph shows how it rises above the general level of the pouring floor. The charging floor is made of heaving flat iron strips, 6 or 8 in. wide, supported on a structural steel framework which is entirely open underneath and gives immediate access to the butterfly damper controlling the inflow of air to the regenerator chambers and also to the slide damper to the main smoke duct as well as to the mechanism for effecting the reversals. The use of fuel oil means of course an absence of cumbersome fuel gas pipes. At each 15-min. period the oil burner at one end of the furnace is withdrawn, that at the other is inserted and from the charging platform the movement of a lever shifts the butterfly damper. The amount of air admitted above the damper is controlled as usual by a bell hung in the air pipe opening. The furnace chimney is a self-supporting steel stack 100 ft. high and 6 ft. in diameter. The oil is warmed by steam coils to maintain suitable viscosity and is injected into the furnace by means of compressed air on the injector principle. The burner, which was developed by Evan J. Moses, general superintendent of the works, is noteworthy for its inconspicuous size. The pipe supplies to the burner form also its support, and the combination swings from trunnion connections at the charging-floor level so that when the burner is pushed into the end fuel orifice of the furnace the supply is automatically turned on and likewise when the burner is swung away from the furnace, as at the end of each period, the supply is turned off.

CHINESE PIG IRON USED

The furnace is hand charged. An inclined narrow-gauge track from opposite directions leads to the charging floor. The charges are of course cold, comprising assorted scrap, including definite proportions of the punchings from the nut shop, and pig iron and the usual fluxes. A large Garrison shear permits the buying of heavy scrap. The pig iron, which is found to run low in sulphur, phosphorus and silicon, is obtained from Hanyang Iron & Steel Company, China. The use of the oil has not had any effect on the sulphur content of the steel, which is running notably low in both phosphorus and sulphur. An 0.15 per cent. carbon steel was being regularly made at the time of the visit to the plant.

The furnace is located in a steel frame building with corrugated metal roof. The building is 62 ft. wide and at present 100 ft. long, but arrangements are made for extending the building, as plans call for the building of another furnace as soon as feasible, this, however, to be of 40 tons capacity. A 60-ft. span electric overhead traveling crane, built by the Llewellyn Iron Works, runs the length of the building, and has a 25-ton main hoist and a 10-ton auxiliary hoist. The crane is used mainly, of course, for stripping the ingots and for handling the hot metal ladle, which is of the bottom-pouring type, of 20 tons capacity and built by the Baker Iron Works, Los Angeles.

BOTTOM-POURED INGOT MOLDS

The illustration gives an idea of the ingot molds and their grouping. The steel is poured into the center mold of the group of seven with three on each side. The center mold is about 12 in. higher than the others and is intended to act in the nature of a sink head. The fact remains that the ingots in storage do not show cavities or evidences of blowholes. The pouring funnel or gate is, of course, removed immediately after pouring. The tops of the molds are closed, it will be noted, except for a 3-in. hole in the center for the escape of gases. For the heavier sizes of bars, which are not carried to the merchant mill, the present scheme is to make smaller ingots by not completely filling the molds so that the bar mills may handle the smaller ingot through successive rollings without shearing. Then the central higher ingot is not always used.

The group casting of the ingots is made on an iron mold or base hollowed out sufficiently to take runner bricks. The bricks are plastered in place in this recess, end to end. A conduit runs through each brick, about 2 or 2½ in. in diameter, and toward one end of each brick is the riser hole, smaller in diameter than the central channel or conduit of the brick. Through the riser hole the steel enters the ingot mold. The central mold, of course, delivers the molten steel into the runner bricks in opposite directions and into the bottom of each other mold the steel rises from the runner bricks, as stated. Stripping is done by lifting the ingot mold from the ingot by means of a direct lift of the crane. The bricks are more or less broken in the operation, the clinging runners and risers are easily removed and the base mold is prepared for another pouring with a new set of bricks. Ingots which stick are ordinarily removed by dropping a weight upon a heavy pin set in the hole in the top of the ingot mold. The molds have a taper of about 1 in. in the length and are 7 x 8 x 50 in. in inside dimensions.

The ingots are reheated in an oil-burning four-door furnace, formerly used in connection with the rolling of iron. There are oil burners at opposite ends of the furnace and it is operated on the regenerative principle, except that there are no checkers. This, as with another similar oil-burning furnace, is operated in connection with a waste-heat boiler, which is of the Cahall type of 250-hp. capacity. There are five such boilers all told, but three of them will be operated independently of steel-heating furnaces and instead will be direct oil burning. The steam, generated at 125-lb. pressure, is used by the rolling-mill engines and by pumps and air compressors and electrical machinery, the bolt-making machines, for example, being electrically driven largely by individual motors. An interesting fact is that the heating furnaces will take care of roughly twice the weight that they did operated as pack-heating furnaces in iron working, partly because 1800 deg. F. suffices in the reheating operation against about 2400 deg. F. in the pack melting, and partly because of the heavier loading or closer filling of the furnace possible with ingots in the one case and billets in the other.

THE ROLLING MILL

The old bar-iron mills have been utilized except that a new set of heavier rolls was required for breaking down the ingot. Accordingly 20-in. rolls have been installed, of steel, and these with three older stands make a combination bar and blooming mill, with the stands, which are three-high, arranged in line side by side and driven directly from a 500-hp. to 600-hp. Corliss engine. The mill is used for breaking down the ingots to billets, which are reheated for the merchant mill or without reheating for finishing the broken down ingots into bars. A hot bed is now being installed for this department from Mr. Moses' design, with mechanical manipulation and traveling table leading to a bar shear. A three-high 14-in. roughing mill takes the reheated billets, this directly driven by a 200-hp. Murray-Corliss engine and there is a 9-in. finishing

mill in five stands belt driven from a 450-hp. Hamilton-Corliss engine.

W. L. Stewart, president of the Union Oil Company, Los Angeles, is president of the Southern California Iron & Steel Company, and A. C. Denman, Jr., is vice-president and general manager. S. K. Rindge, Los Angeles, is treasurer and A. W. Grier is secretary.

Choosing and Training the College Engineer

A Plan Successfully Conducted by the Cutler-Hammer Mfg. Company in Which the Personal Equation Has Important Consideration

For ten years the Cutler-Hammer Mfg. Company, Milwaukee, has recruited the engineering and sales departments of its organization from graduates of engineering colleges, following a plan which attaches importance in the selection of men to considerations not generally given prominence. The exceptionally rapid growth of this company not only made necessary the building up of its organization by the acquisition of a certain proportion of new material each year, but also afforded conditions favorable to the rapid development of men of such prior training as the average technical graduate acquires for specific openings in the sales and engineering staffs.

Thus the situation made the continued retention of these young engineers in the employ of the company the principal objective of the plan, rather than merely a replacing of employees from year to year in order to maintain an operating force. At the same time the size of the Cutler-Hammer Mfg. Company organization was not such as to permit of absorbing a large number of graduates such as might be procured through a general invitation extended at a number of schools each year, as has been done by some of the larger companies which maintain apprenticeship systems for college graduates.

The accompanying tabulation presents in abbreviated form the net results secured since the inauguration of the plan in 1905.

	Especially selected for Milwaukee engineering department		Employed for other service or acquired with other business	
Year	Number employed	Still with company	Number employed	Still with company
At end of 1905.....	7	7	8	5
During 1906.....	8	6	4	2
" 1907.....	5	3	4	2
" 1908.....	5	1	1	0
" 1909.....	5	3	2	2
" 1910.....	7	6	5	2
" 1911.....	9	6	8	4
" 1912.....	8	5	6	5
" 1913.....	10	10	3	3
To June 1, 1914....	2	2	0	0
Total	66	49	41	25

The total number employed in 8½ years was 107; the number still with the company 74, or 69 per cent. Of those selected for the engineering department at Milwaukee 74 per cent. and for other service 61 per cent. are still with the company. Those employed were from 28 colleges; of this number 23 are still represented. Supplementing the above, it may be said that out of nearly 70 branch offices the district managers, with one exception, are men secured in this manner.

HOW NEW SELECTIONS ARE MADE

Each year as the spring term of college approaches, the company makes an estimate of the number of new men required in the organization. Some one school is selected and from this institution the entire group is drawn. If the full number cannot be obtained, fewer are taken, the number being sacrificed rather than requirements. A committee, ordinarily three representatives of the company, including the general superintendent, one from the engineering department and one from the sales department, through arrangement with the college authorities, addresses the students, presenting an outline of the company's proposition. A general invitation is extended to those men who are interested to make an appointment with this committee at a later time. The committee then camps down in the college town and interviews individually each candidate who presents himself. Consideration is given to his general record in school as regards regularity and dependability, to his athletic record, to his college activities, to his social affiliations and to his personal tastes, as well as to the general bias given to him by his previous connections. Importance is also attached to his scholastic record, although special prominence is not given to this item. Each member of the committee makes his own estimate of each candidate independently of the others, during the examination, and the committee then confers as to the candidate's desirability, which, to make the man acceptable, must measure up in an established scale of merits and demerits. Thus the men are selected, rather than solicited.

THE HUMAN ELEMENT

In choosing the group of men each year from but one school, the theory is that a very strong bond has already been established among these men which will continue to hold them together when in the employ of the company; will be likely to cause them to room together and to do the same kind of things, to the end that they will be frequently in each other's company and as a result will carry with them, outside of working hours, discussions of the work they are doing; that they will hold their interest in the things they are learning and the problems they are meeting to a much greater extent than if their interests were at once diverted to other affairs.

In choosing the men the committee also avoids taking those whose homes are in Milwaukee. The company believes that despite a man's having been away to school for a period of years, on his return he naturally drops back into the environment in which he has grown up, and in consequence it finds itself seriously handicapped in influencing the direction in which the young man's connections are to be built up. Those in charge of the plan believe that great importance attaches to a correlating of the beginner's work inside of the shop with the development of his character and associations outside. An instance is cited of one man from an

Eastern college, of international fame as an athlete, who went to work for the company under this plan within the past few years. He was of excellent material in every way, except that his egotism, founded upon athletic prestige, soon brought him into disfavor among the other employees at the plant. An investigation was made of the way in which the young man's time was spent outside of the works and it was discovered that his athletic ability and his natural inclinations had led him into a very active association with the Y. M. C. A. and the high schools, where he gave a great deal of time to the training of the boys. Among these boys he was naturally very much of a hero, a situation which simply added to his vanity. He was called in and some of these things were pointed out to him and he was advised, almost to the point of being instructed, to give up this work and seek the company of older people where he would be required to stand upon his merits in other lines than the one in which he was pre-eminent. As a result, in a very short time this simple expedient brought out a very noticeable change and out of natural ability and worth has now come substantial progress.

THE MONEY SIDE

Records kept by the company indicate that the cost of taking in each one of these men and bringing him to the point where he is of real value and prepared to create results approaches $2000. The plan is therefore not an inexpensive one, but as compared with the cost of hiring more mature men who have acquired what would be of similar value to the company through other forms of experience, still represents a decided saving.

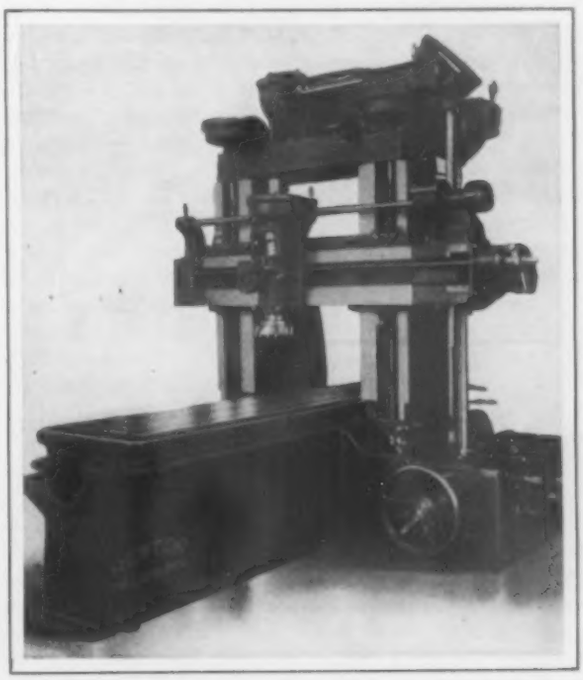
Candidates are first placed in the shops of the company and given, as rapidly as possible, a practical and working insight into the various products manufactured. During this entire period the company finds that the student seldom pays his way in work turned out. There is no specific length of time for this service and it depends somewhat upon circumstances, upon the need of a man in some department for which a young engineer is requisitioned, upon the appearance of some outstanding fitness for a particular kind of work, and various other circumstances. The plan is not conducted according to a hard and fast rule, but is based upon handling each man as close observation may suggest. The groups taken in each year are sufficiently small to insure individual attention to each man and also his falling completely under the influence of the company's ways of doing business. The opportunity which the plan affords for inculcating in the men who are to be the future representatives of the company, the methods and policies of the Cutler-Hammer Mfg. Company, unhampered by other experience, is considered one of its most valuable features.

The Allis-Chalmers Mfg. Company, Milwaukee, Wis., which is now building a line of light farm machinery, small rock crushers, etc., has developed a new type of caterpillar tractor truck employing a substantially standard motor-truck chassis. The load capacity is 5 tons and the drawbar pull varies from 2370 to 9000 lb. The front wheels are of the ribbed steel type and the rear wheels are supplanted by double caterpillars with sectional steel treads. The truck is designed for the service of road builders, lumbermen and others who have to do heavy hauling over poor roads or no roads.

The average number of men now employed per week in the Baldwin Locomotive Works is 5045, against 3970 in October and 7950 in April of last year.

Slabbing Machine with One-Pulley Drive

The Newton Machine Tool Works, Inc., Twenty-third and Vine streets, Philadelphia, Pa., has brought out a vertical slabbing machine arranged for driving from a single pulley. In this machine gear boxes provide the various changes of feeds and speeds. This machine, which is of the single-spindle type, will accommodate work 34 in. wide which does not exceed the maximum opening under



A Newly Designed Vertical Slabbing Machine Arranged for Driving from a Single Pulley

the spindle of 36 in. If desired, two, three or four spindle machines can be supplied.

The vertical spindle, which is 3⅛ in. in diameter in the driving sleeve, is driven by a bronze worm wheel and hardened steel worm fitted with roller thrust bearings running in oil. The end of the spindle is tapered to conform to the Morse No. 6 standard and has a broad face key in the end for driving the cutters. Reversing cross feed on the rail, giving 12 changes and reversing fast power traverse are provided. The spindle is driven at nine different rates, ranging from 16½ to 99 r.p.m., the various speeds being obtained through a gear box with inclosed gears running in oil. A hand-controlled rack and pinion provides for the adjustment of the spindle sleeve. The spline shaft bushings are provided with auxiliary bushings rotating with the shafts. These are relied upon to prevent the escape of oil and preserve the fixed bushing from excessive wear due to contact with the spline or the key seats.

The table has 12 feed changes ranging from 0.355 to 13 in. per min. These are independent of the spindle speeds, and there is a rapid power traverse at the rate of 30 ft. per min. in both directions for the table.

Walter F. Keenan & Bro. have established a place of business at 17 New Chambers street, New York, as dealers and jobbers in pipe and other engineers' and steamfitters' supplies, steam and hot water accessories and factory and office building supplies. Walter F. Keenan of this firm has been connected with the John Simmons Company for the past 24 years, and is therefore thoroughly familiar with all branches of the supply business.

Corrodibility of Cast Iron and Steel*

How the Nature of the Medium Relatively Affects the Two Metals—Results Unchanged by Modern Methods of Manufacture

BY J. NEWTON FRIEND AND C. W. MARSHALL

Comparatively little work has been done within the last decade on the relative corrodibilities of cast iron, wrought iron, and steel. The earlier researches are now of considerably less practical value than formerly, in view of the great changes that have taken place in the methods of manufacture, accompanied, of necessity, by changes in the physical and chemical properties of the metals. The most recent researches are those of Arndt and of Wölbling, who have independently compared the corrodibilities of cast irons and mild steels, both on exposure to moist air and during prolonged immersion in wet sand. The rate of corrosion was determined by measuring the volumes of oxygen absorbed. In wet sand the steel was observed to be more resistant to corrosion than cast iron, the reverse being the case in moist air.

DETAILS OF THE CORROSION TESTS

It was only to be expected, in view of the complex nature of cast iron, that the relative corrodibilities of that metal and steel would vary very considerably with the nature of the corroding medium, and the present research was undertaken in order to throw light on this point. To this end a typical gray cast iron and a mild open-hearth steel were chosen, the metals being cut into square bars measuring 4.5 x 1 x 1 cm., and weighing approximately 30 g. After removing the surface skin on the emery wheel, the following tests were made:

Tap-water Tests.—The weighed samples resting on plates of paraffin wax were laid in beakers containing 300 cu. cm. of tap water, and placed in a dark cupboard. After three months the metals were removed, scraped clean, dried in a steam oven and weighed, the loss in weight being taken as a measure of corrosion.

Salt-water Tests.—These were carried out in a manner exactly similar to the tap-water tests, save that the corroding medium was a 3 per cent. solution of sodium chloride.

Alternate Wet and Dry Tests.—These were carried out in a large metal bath, the metals lying upon a paraffin sheet, and alternately covered with water and allowed to drain, as described in a previous paper.

Alternate Wet and Dry and Hot and Cold Tests.—These tests consisted in subjecting the samples to wet and dry, as in the previous case, but during the daytime the bath was heated to about 80 deg. C., and allowed to cool at night. The corrosion was relatively very rapid. The metals were laid on plates of glass, paraffin being inadmissible on account of its low melting-point.

Alternate Hot and Cold Tests.—These consisted in completely submerging the metals on glass plates in a trough of water, heating to boiling during the daytime, and allowing to cool at night.

Acid Tests.—These tests resembled tap-water tests, save that the corroding medium was dilute sulphuric acid, which was frequently renewed with the two lowest concentrations. The concentrations of the acid employed were as follows: 0.05, 0.5, 5, 10, and 20 per cent, respectively. (350 cu. cm. of acid were used in the last three experiments.) Prior to drying in the steam oven the metals were rinsed in dilute caustic potash solution. This, by neutralizing any traces of free acid remaining in the pores of the metal, prevented further corrosion during drying.

Analyses of Metals Used

	Steel, per cent.	Cast iron, per cent.
Graphite	....	2.75
Combined carbon	0.21	0.61
Silicon	0.013	1.72
Manganese	0.49	0.75
Sulphur	0.026	0.085
Phosphorus	0.053	1.06

The results obtained are given in the table.

Table Showing the Results of the Corrodibility Tests

No.	Corroding medium	Duration of test	Steel: Loss in weight, grammes	Steel: Mean	Steel: Corrosion factor	Cast Iron: Loss in weight, grammes	Cast Iron: Mean	Cast Iron: Corrosion factor
1	Tap water	3 mo.	0.1912 0.1860	0.1886	100	0.2210 0.2206	0.2208	117
2	Tap water	3 mo.	0.1838 0.1972	0.1905	100	0.1950 0.2010	0.1980	104
3	Salt water (3 per cent.)	3 mo.	0.1958 0.1976	0.1967	100	0.1866 0.1846	0.1856	94
4	Salt water (3 per cent.)	3 mo.	0.2006 0.2250	0.2128	100	0.1844 0.1972	0.1908	90
5	Alternate wet and dry	2 mo.	0.4032 0.3138	0.3585	100	0.2914 0.2884	0.2899	81
6	Alternate wet and dry	3 mo.	0.2174 0.2782 0.2450 0.2766	0.2543	100	0.2560 0.2316 0.2750 0.2586	0.2553	100
7	Alternate hot & cold water	11 wk.	0.2178 0.2106	0.2142	100	0.2174	0.2174	101
8	Alternate hot and cold and wet and dry	6 wk.	0.2800 0.2290	0.2545	100	0.1798 0.1804	0.1801	71
9	0.05 per cent. sulphuric acid	6 wk.	0.4418 0.4324	0.4371	100	0.4790 0.4916	0.4853	111
10	0.5 per cent. sulphuric acid	6 wk.	4.3260 4.3364	4.3312	100	5.0516 5.2170	5.1343	119
11	5 per cent. sulphuric acid	3 hr.	0.0800 0.0794	0.0797	100	0.3114 0.3228	0.3171	398
12	5 per cent. sulphuric acid	16 hr.	0.4518 0.2866	0.3692	100	2.0436 1.9286	1.9861	538
13	10 per cent. sulphuric acid	3 hr.	0.1466 0.1399	0.1433	100	0.5168 0.5022	0.5095	355
14	10 per cent. sulphuric acid	16 hr.	0.9608 0.9004	0.9306	100	2.0680 2.1058	2.0869	224
15	20 per cent. sulphuric acid	3 hr.	0.2722 0.2632	0.2677	100	0.7082 0.7124	0.7103	265

CONSIDERATION OF THE RESULTS

In considering these results it is important to bear in mind that, strictly speaking, they apply only to the particular metals tested, and that their application to the behavior of cast iron and steel generally depends upon whether or not these samples are truly representative. The authors believe they are, because the results agree, in so far as comparison is possible, with the data published by Arndt and Wölbling. They are also in general harmony with the data given by Thwaite in 1880 and by Grüner in 1883, which seems to suggest that the relative corrodibilities of cast iron and steel bear much the same relation to one another at the present time as in earlier years, despite the alteration in methods of manufacture.

The following observations suggest themselves as particularly important:

*From a paper presented at the annual meeting of the Iron and Steel Institute in London, May 13 and 14.

1. In the alternate wet and dry tests, whether carried out at room temperature or alternately heated and cooled, the cast iron usually had the decided advantage.

In experiment No. 6 the flow of water was unavoidably stopped for a week or two, with the result that the rust, caked on to the metals, was very difficult to remove, and appears to have exerted a marked protecting influence against further corrosion. Experiments Nos. 5 and 8, however, proceeded uniformly throughout their duration. The alternate wet and dry tests probably reproduce, as nearly as can be done in a laboratory, the corrosive forces involved in exposure of iron to the action of the outside air in practice. These experiments thus appear to indicate that in ordinary cases of exposure cast iron articles would last longer than steel ones—and this is usually found to be the case in practice.

2. Complete immersion of the metals in water does not give quite the same results as the alternate wet and dry tests, there being now little to choose between the cast iron and steel. (Experiments Nos. 1, 2, and 7.) If there is any advantage it appears to lean towards the steel.

3. The cast iron appears to have a slight advantage over the steel in salt water.

4. In acid solutions the cast iron was very badly attacked, the steel proving in comparison highly resistant. The variation of the results with time and concentration of acid is noteworthy, constituting a remarkable testimony not merely to the uselessness, but to the actually misleading nature of acid acceleration tests, when used as a rapid means of determining the general corrodibility of iron and steel.

CONCLUSION

From these results it is abundantly evident that no simple answer can be given to the oft-repeated question, "Which is the more corrodible, cast iron or steel?" unless full details are given as to the nature of the corroding media.

In ordinary air gray cast iron would appear to be more resistant to corrosion than steel. When completely submerged in water there is very little to choose between the two metals. In regard to resistance to sulphuric acid attack, the steel has the decided advantage.

Rolling Mills for Cold Metal

Some points relating to the design of the pinions for rolls used for rolling cold metal were recently given in London Engineering, and from the article have been taken the following notes:

The pitch diameter of the gears for cold rolling mills is settled, within small limits, to the same diameter as that of the rolls, to preserve as far as possible the alignment between the rolls and pinions. As the distance between working centers of the rolls is always greater than their diameters, there is no objection to the pitch diameter of the pinions being slightly greater. Table I gives the very general practice for the proportions of cast-steel double helical roll pinions for a series of sizes of mills in common use.

It will be noted that the pinions are shrouded to the pitch line. The length of the necks B as given is to suit the older forms of housing; the length of bearing is much greater for the improved type of housing and may be as given in Table II. The diameter of the necks is equal to, or slightly less than, that of the corresponding roll-necks. From considerations of strength they might, of course, be much smaller, especially when the rolls are of cast iron; moreover, the pinion bearings do not have to withstand the severe stresses resulting from the pressure on the rolls.

For the smaller rolls and mills used for the finer classes of work, the adoption of machine-cut pinions is becoming very general, and there can be no doubt that their use has everything to recommend it; vibration and noise are reduced to a minimum, and

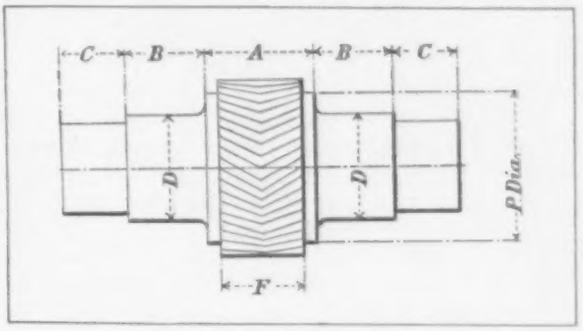


Table I.—Double Helical Steel Pinions

Size of rolls, in.	Diameter of pitch circle, in.	Number of teeth	Pitch, in.	Width, face, F, in.	Diameter, neck, D, in.	A, in.	B, in.	C, in.
8 x 8	8	12	2.1	6	5	8	4½	3¼
9 x 9	9	14	2.02	6⅛	6¼	8	5⅛	3½
10 x 10	10	14	2.24	6⅛	6½	8	5½	3½
12 x 12	12	15	2.5	7½	7½	9½	6¾	4½
16 x 16	16	16	3.14	9¾	10	12½	9½	5½
18 x 18	18	16	3.54	10¾	11	13½	11	6

Table II.—Mill Pinions with Long Bearings, to Suit Improved Housings

Size of rolls, in.	Diameter, neck D, in.	Length of bearing, in.
8 x 8	5	7
9 x 9	6¼	8
10 x 10	6½	8½
12 x 12	7½	10
16 x 16	10	13
18 x 18	11	14

there is a considerable saving of power. Where the rolls are large, however, the additional cost becomes a serious matter, and for these the use of machine-cut gears is still rare; but if the first cost can be faced, the writer is of the opinion that the extra expense is soon repaid.

Unfortunately, machine-cut double helical pinions are still comparatively costly; and while, as it has been pointed out, this is the best form of tooth for a rolling mill, it is here the straight-cut stepped teeth have their advantage; they are cheap to produce, and have been for some time in general use, proving perfectly satisfactory for the highest grade work. Such pinions are, no doubt, best cut from a solid forging, but they may be made more cheaply by keying two separate pinions on a spindle, arranging for the necessary pitch difference by the position of the keyways.

Applications of Metal Spraying Process

At the meeting of the American Society of Mechanical Engineers held May 11 at the Engineering Societies Building, New York City, John Calder presented a paper on the applications of the Schoop process of metal spraying, which was described in *The Iron Age*, August 20, 1914. After briefly reviewing the methods formerly employed for securing a non-corrodible protective covering for metals, Mr. Calder described the development of this process. Particular attention was paid to its use in engineering work, special emphasis being laid on the point that the process could not be employed where the material coated was afterward subjected to tension or bent at a sharp angle. It was brought out in the paper that the pressure of air required for spraying the molten metal was steadily being reduced, and that recently satisfactory work had been done with a pressure as low as 18 lb. Numerous lantern slides, illustrating the apparatus employed and some of the work done, supplemented the paper, and at the conclusion of the lecture a demonstration of the process was given in the basement of the building.

Improvement in By-Product Foundry Coke*

Changes in Ovens, More Care in Selection of Coals, Better Regulation of Moisture and More Uniform Rate of Coking

BY C. S. LOMAX†

Properly made by-product coke is displacing first-class beehive foundry coke whenever the two products come into fair competition. A few years ago the case was very much the other way. The maker of beehive foundry coke paid little attention to the efforts of a by-product manager to sell an occasional carload of his coke to the foundryman. The two processes, as you know, are simply two methods of melting coal and distilling out the volatile matter to produce coke. The beehive oven burns out the combustible volatile matter and some carbon, while the by-product or retort oven distills the coal in a gas-tight retort with the total exclusion of air. The by-product coke oven was introduced in this country in 1893 with claims that a far wider range of coals (in analysis and qualities) could be coked by this process. The promoters and constructors did not limit themselves properly in making claims as to the virtues of these ovens and certainly did not fully understand the needs of coke users. The process was generally introduced with the same form of oven, accessories and methods of coal and coke handling as existed at that time in the countries from which the oven came, that is, Germany and Belgium.

In 1908, with 4007 by-product ovens in existence in the United States, only seven plants (totaling 710 ovens) made efforts to sell foundry coke, and their foundry sales were but a small fraction of their total product. A large majority of by-product oven plants were built by steel companies to make their own blast furnace coke, and coke sold by some of the other plants was not held in high esteem by the foundryman. Today more by-product ovens are selling coke to the foundry trade, and in general the verdict is in favor of the retorted coke.

EARLY CONDITIONS

As the progress of retort coke has been slow it may be well to state some of the causes for this slow development, especially in the foundry coke trade. The earlier plants built for other than blast furnace coke supply faced the following conditions:

1. Comparatively little was known of the coking action of American coals in by-product ovens.

2. Contracts with blast furnaces were necessary to keep the oven running uniformly; hence blast furnace coke with domestic coke as a side issue was a simpler proposition.

3. If a suitable coal or coal mixture were used the coking action of the ovens was far from perfect.

4. The operator had either no sorting apparatus and forked the foundry coke on a bench (which cost too much) or his classifying apparatus did not satisfy the foundryman's needs.

5. It must be added that the by-product manager sometimes let his desire for by-products dominate his judgment in the selection of a coal or coals.

Under these circumstances it was not strange that many foundrymen would not try by-product coke and prejudged it as an inferior article. This belief became strong enough on certain alleged characteristics of by-product coke to make first sales difficult in some sections and to warrant a statement of the present condition of the art.

COAL SELECTION AND RATE OF COKING

With forty-three plants now in operation in fourteen States it is evident that not only the large steel companies but the principal by-product coke oven contractors and the jobbing by-product plant operators must have made a careful study of the coking qualities of the coals which are commercially possible for use at the sites of the various plants. This has been done by making the ordinary proximate coal analysis (including the analyses for sulphur, phosphorus and nitrogen), with a determination in the laboratory of the by-product and gas yields of the various coals by carbonization on a small scale in tubes, making what is known as a tube test for gas, tar, ammonia, benzol and coke. By comparison of these laboratory results with coking tests in ovens which were part of a regular operating battery, the promising coals have been classified by most of the operator and construction firms. The latter have generally reserved the right to make coking tests on a working scale in the plants they have built, and one of the oldest firms has retained the operation and management of a large majority of the ovens built by it. The data thus collected have enabled the operators to take the correct first step toward an acceptable coke.

Regulating, as this will, the percentage of ash, sulphur and phosphorus in the coke and giving him advance information as to the possible by-product revenue, the operator can quickly decide whether a single coal promises to give him the desired cell strength, structure, size and shape of coke pieces, freedom from sponge and cross fracture, or point out the need of an added coal or coals to attain a successful foundry coke when he has made the manufacturing details of his process right.

Starting with the proper coal or coal mixture the by-product oven first requires to be operated at as uniform a rate of production as possible, both for the sake of the life of the oven and to get the best coke structure. This formerly meant that the production of foundry coke was a side issue of very small proportions in a plant under contract to furnish blast furnace coke. Today the foundry coke market has appreciated retort coke to such an extent that several plants make it their chief product, and where blast furnace and foundry coke are produced, the care bestowed upon the making of the foundry coke and the apparatus provided therefor are as complete as if it were the only product, for it has become an aid in procuring the uniformity of operation necessary for its own production. Uniformity of operation (by which is meant here the completion of the coking of each oven in the same time) is the surest method of getting rid of the faults of under-coking and over-coking. The former fault produces black ends. The latter multiplies the cross fractures so that the size of the average lump is too small. The coke may be free of breeze and dust and the remainder of the prepara-

*A paper read at the meeting of the Pittsburgh Foundrymen's Association.

†General Superintendent Lehigh Coke Company, South Bethlehem, Pa.

tion well done, but each handling shatters the overcoked product until it is very poor cupola fuel.

IMPROVEMENT IN THE OVEN

Having procured a coal and a possible coke market, the by-product coke producer formerly worked with an oven inferior in several way to those now available. In the matter of obtaining uniformity of oven wall temperature and hence coke similar in structure along the entire length and hight of the charge, the facilities now afforded are better because the builders have a clearer understanding of the control of drafts, combustion, sizes of flues, methods of introducing and distributing fuel gas in the oven wall, and have made easy the inspection of all parts of the oven flue, at the same time putting in accessible means for controlling the heats in the various parts of these flues.

The widespread, and in fact almost universal, us of American silica brick during the last decade has improved the oven and hence the coke by making the walls more refractory and of higher heat conductivity. These properties have helped reduce the coking time in the obvious way that higher heats could be carried in and transmitted quicker through the oven wall to the coal charge. A further aid to heat control and hence good coke has been the continually increasing use of recording gauges, thermometers, pyrometers and calorimeters. They help the by-product oven heater and operator in reducing to facts for his use many things which a few years ago were lightly supported theories. From exact comparisons he knows how much gas pressure and stack draft will produce the right heats for a desired coking result. Formerly he assumed these things from a hazy experience. In a similar way he keeps in touch with the thermal value of the gas he is making and the drafts and pressures which affect this value.

Many of these matters are vital in a by-product coke plant if high-grade coke is to be a regular product. Another one of the by-product coke oven operator's burdens has been removed by the improvement in the coke oven door. For some years this door was simply a cast-iron frame filled flush to the front with firebrick and fitted to the outside of the brickwork of the oven. Necessarily, there was a layer of coal which did not receive as much heat as that further toward the interior of the oven, as this coal lay against the unheated door and was outside the first heating flue. Doors now used in one type of ovens have the brick project four inches into the oven. This pushes the charge of coal back far enough so that the coal next to the door has an equal chance to be heated with that in other parts of the oven. The result is an elimination of the "black heads" or partly coked coal which formerly ended an oven of coke.

REGULATION OF MOISTURE

One of the formerly prevalent beliefs was that by-product coke was a rather blackish looking sponge soaked with water. This idea was no doubt started by the lack of the proper coal and coking facilities, as previously mentioned, but it was fostered by the fact that the arrangements for quenching and handling the coke after it had been pushed out of the by-product ovens were inadequate for the task of producing a good-looking coke and one low enough in moisture to compete with the beehive product. The first few plants selling foundry coke on any scale pushed their coke from the oven on an inclined wharf, where it landed in an irregular heap. This heap was roughly pulled apart before, during and after quenching with a supply of water from hose. This method quenched the coke rather slowly, permitted the surface of the lumps to burn to a dull leaden or black color and wet part of the coke a great deal more than others. Coke for foundry purposes was then forked out and carried either by a belt conveyor or barrow to the car for shipment. In consequence of the restricted space in front of the battery of by-product coke ovens, the loading had to be done rapidly, and the amount of water put upon the coke was left to the judgment of "the man with the hose." The result was a dull-looking product with an unknown moisture content, regardless of the structure or size of the coke. As coke sampling for moisture in a carload is a difficult task to accomplish accurately, there arose differences between the buyer and seller as to the allowances for moisture.

The next step forward was the adoption of the inclined deck quenching car, built of iron and steel, which received the oven load of coke as it came out and spread it in a tolerably even layer on the deck of the car. Water was applied to this quencher load of coke either in front of the oven or at some point beyond the end of the oven batteries, but the quenching was done entirely in the car and in such a manner that the amount of water applied to the coke was still a matter of judgment on the part of the quenching car operator. This was an improvement, but it did not result in as consistently low a percentage of moisture as was necessary, even though enough cars were provided to let the coke steam off in the car itself. This system has been improved by the use of a quenching station at which water is dropped in the form of a heavy rain upon the coke from a series of pipes covering the length and width of the quenching car, the water supply being kept at a fixed pressure and the valves kept open for a definite time in seconds. At the end of this period the car is moved alongside of an inclined coke wharf. The doors at the discharge side of the car are opened and the coke slides out upon the wharf. In this transfer any hot spots in the coke are uncovered and a small amount of water applied to them.

By making the coke wharf of sufficient capacity an oven charge of coke is allowed to stay upon the wharf for 15 to 20 minutes to dry and cool. Valves or gate at the lower edge of the wharf are then opened and the coke permitted to feed on a belt conveyor which takes it up to the various forms of screens which first separate the dust and breeze, then remove all coke smaller than 3½ in. by 3½ in., and finally deliver the over-size pieces upon a belt or chute for delivery into the shipping car. At either the head of the first conveyor or during its progress on the last belt, the operator picks out any coke of objectionable structure. If the screening and the coking have been well done there is very little of this. If the coke has been properly received from the oven upon the deck of the quenching car it is distributed in an even layer over the entire width and length of the car and not more than 2 ft. in depth. The weight of the coke and the amount of heat is always practically the same, and at the quenching station a measured amount of water is applied in a definite and regulated time. If this quantity of water and the speed at which it has been applied has been right much of the coke brought back from the station to the cooling or receiving wharf is in the condition of having its outside quenched and somewhat moist but its inside is almost red hot. In sliding from the quenching car to the wharf the coke mixes to some extent, and it is seldom that more water has to be put upon any part of it. After a short experience with this

method of applying the water coke is placed in the car for shipment with the moisture percentage at the command of the operator. It is an entire departure from the method of judgment on the part of the workman. It is to be noted, however, that the uniformity in size of lump and structure above mentioned is essential to success in moisture control. The 2½ per cent. of moisture which is the standard in Connellsville coke is readily and consistently bettered in coke prepared by this method.

It will be found also that if the coke is removed quickly in the quencher car from the oven to the quenching station and the required amount of water quickly applied, the color of the coke will be good because it has not been given time to burn its surface rough. If the coke structure is good the dull color is only a surface effect.

HANDLING AND SIZING

In the various handlings from the oven to the quenching car, from the quenching car to the wharf, from the wharf to the conveyor, over the screens and from the screens into the cars the coke must either slide or be carried on conveyors and not dropped further than the smallest possible distance before it lands finally in the car. This is necessary, as no amount of previous preparation will keep any coke from breaking up under a succession of drops.

To secure for the consumer an elimination of all coke smaller than a 3½ in. x 3½ in. size the first of the two methods favored is the use of short rotary screens running at a speed of twelve to fifteen revolutions per minute with perforations to suit the size of the undersize wished. A later device and one which is finding much favor is the rotary grizzly, a screen which consists of a number of rows of parallel rotating cast-iron discs 18 to 24 in. in diameter. The distance between discs on the same shaft is 3½ in., and the rows are at such a distance from one another that the space left for the undersize coke to pass through is about 3½ by 3½ in. As the tops of each row of discs move toward the discharge chute of the apparatus the over-size coke passes along the tops and finally lands in the chute clear of dust and perfectly sized. As the coke rides almost entirely on the circumference of the discs, this form of screen lasts longer than the old-style perforated rotary screen and is equally effective.

MISTAKEN IMPRESSIONS OF THE PROCESS

In order to correct some impressions made by statements in United States Government bulletins of 1910 and 1913 the following is to be noted:

No by-product coke oven operator sacrifices either quality of coke or quantity of by-products in his oven working. If done at all it is a mistake in the selection of coals or a defect in his oven. No operator catering to the foundry trade willingly makes this mistake. He does not try to push ovens with incompletely coked charges. This loses him a valuable and important quantity of by-products, spoils his coke and gets him into difficulty. Such charges will in all probability break under his pusher ram head, then stick and damage the oven walls. It is a losing proposition.

It is also a wrong impression that a certain number of hours coking time is necessary for good coke. By-product ovens are now built and in operation which produce first class metallurgical coke in sixteen hours, while others require longer. This is a matter of oven design and the coke in general is better fuel if the oven is operated at the speed of coking for which it is designed. Faster operation is a feature of the improvements in by-product coking of the last eight years.

CUPOLA RESULTS

It was not my intention to mention cupola results obtained by the use of coke made under the above outlined conditions by our own company, but as these facts are known to me with certainty and they are comparative with quite a variety of beehive cokes, the statement may be of interest. Our sales have been to foundries having cupolas varying from 30 to 84 in. in diameter. We have had no case in which our coke has failed to effect an increase in the amount of iron melted per hour. The actual increases noted by our demonstrator on cupolas from 67 in. to 84 in. in diameter have been from 5 to 25 per cent. in the amount of iron melted per hour with the same amount of coke. There has been a reduction of the time taken to light up, and in every case hot iron has been a feature of the practice. The range of practice of the foundries which use our coke varies from the making of children's toys, small hardware and stoves, to castings for lining the New York subway. In operating cupolas for economy in coke used, our coke has shown an increase in the iron melted per pound of coke. All weights were actual with no allowances. No changes in blast pressure or other details have been necessary.

Rolling Mill to Be Built in Cuba

A rolling mill, financed by Cuban capital, is now in course of construction by the National Rolling Mill of Cuba at Guanabacoa, about two and one-half miles from Havana. It is to be operated on scrap, as this material is available at $3.50 to $5 per ton. The mill is intended primarily to furnish material for the company's fabricating plant, which will be constructed later, to supply the local trade.

Machinery from a plant formerly operated at Cardenas, with some additional from the United States, will make possible a production of 1000 tons per month. The present equipment consists of the power plant, three shingling furnaces, scrap shears, steam hammers, a 12-in. roughing stand and a 9-in. finishing mill, machine shop, roll department and store houses. The company hopes to have the plant in operation by November 1. The location of the plant is considered ideal, as shipments to all parts of Cuba can be made by either water or rail. This is the first important venture of its kind on the island and its progress will be watched with much interest.

The Electric Club of Cincinnati, Ohio, was organized at a meeting held at the Cincinnati Business Men's Club on the evening of May 14. The following officers were elected: President, Thomas J. Ryan; vice-president, L. T. Milnor; second vice-president, A. M. Wilson; secretary-treasurer, A. L. Reichmann. The executive committee is composed of W. W. Freeman, Walter Draper and J. A. Brett. It is the aim of the new club to meet every month to discuss matters of interest to the electrical trade. For the present it will not be connected with any of the national electrical organizations.

The Waterworks Manufacturers' Association held its annual election at the Hotel Gibson, Cincinnati, Ohio, May 13. The following officers were elected for the ensuing year: President, Frederick S. Bates, Rensselaer Valve Company, Troy, N. Y.; vice-president, Robert E. Milligan, New York Continental Jewell Filtration Company, New York City; treasurer, Charles R. Wood, R. D. Wood & Co., Philadelphia. The secretary will be elected at a future meeting of the organization, but it is stated that the incumbent, Ernest K. Sorensson, of New York City, will be re-elected.

Miter Cutting Machine for Steel Shapes

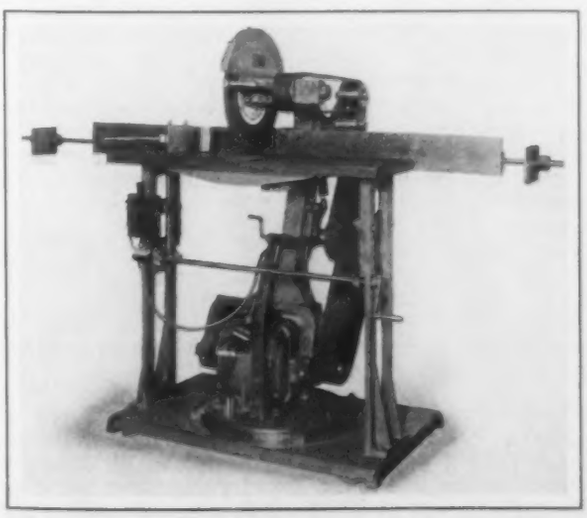
For use in its own factory for making miter cuts in hollow steel moldings the Grinden Art Metal Company, 419 Marcy avenue, Brooklyn, N. Y., designed and built a special machine. This has since been placed on the market for general use in cutting all kinds of steel shapes at an angle. Among the points upon which special emphasis is laid are rapidity of cutting, economy of working space and the ability to mount it on a wheeled truck for transportation around the shop.

The machine makes use of an emery wheel 18 in. in diameter and ⅛ in. thick. This arrangement is used, it is emphasized, because of its clean cutting of miters, the work, it is pointed out, being cleaner and more accurate than hand labor. The dust from the cutting is removed by attaching the opening provided in the machine to a small exhaust fan. The cutting wheel has a heavy sheet steel cover to protect the operator from injury in case of breakage. If circular steel saws can be employed, the builder recommends their use on account of the longer life and is prepared to furnish them in the same size as the emery wheel, although it is pointed out that the cutting is not as clean.

The machine is entirely self-contained and is furnished with a driving motor ready for connection to the electrical supply mains. Either alternating or direct current motors can be furnished to meet the requirements of the particular shop in which the machine is to be used. A set of adjustable gauges for long and short lengths is furnished, as well as a quickly adjustable clamp for holding the moldings or other work in position. The table can be raised or lowered to compensate for the wearing away of the wheel.

In operation the machine is said to be capable of turning out as much work as four men using back saws and miter boxes. The cutting portion of the machine is arranged to permit changing from a straight 90-deg. cut to a right or left miter or any intermediate angle without changing the original position of the work. This, it is emphasized, avoids the necessity of swinging moldings or other long pieces on the table of the machine to obtain the miters.

The hight of the machine is 62⅝ in. from the floor to the top of the wheel guard. The width without the gauges is 6 ft. and with the gauges extended to the full length on both sides of the machine, the over-all width is 16 ft. The total clearance required is 48 in., which is the depth of the machine. The weight is 1575 lb. Another size of machine is built, using a 12-in. wheel. This is only 60 in. in hight, and the depth is only 36 in. The weight is less, being 950 lb. net, but the width is the same as the larger machine.



A Machine for Cutting Miters in all Kinds of Steel Shapes, the Work Being Done by an Emery Wheel

German War-Driven Scientific Progress

The extent to which the war has been the cause of scientific progress in Germany is cogently emphasized in a communication, from the director of a large German metallurgical company to a correspondent in New York, which the Engineering and Mining Journal recently published, and for the reliability of which it vouches. The important points follow:

Means have been found to manufacture gun and rifle cartridges and the fuse heads of grenades without copper or brass. Soft iron, having a small copper content, and zinc, treated by a special process, are made to replace to a large extent copper and brass.

Realizing that the prolongation of the war may result in a shortage in aluminum, though the chief raw material for the manufacture of this, beauxite, comes from northern France, a Heidelberg chemist has discovered an apparently rational process for recovering aluminum oxide from ordinary clay containing about 30 per cent. Al_2O_3. The process also provides for the simultaneous extraction of the alkalis, particularly potash. Two aluminum factories will soon be completed and will make Germany independent of foreign countries as to this metal.

Attention is being given to the substitution of magnesium for aluminum. It has been shown that metallic magnesium, and particularly a magnesium-aluminum alloy, may possibly replace copper as an electrical conductor. Another large magnesium plant is being erected to use the large quantities of magnesium chloride which are a by-product of the potash industry, hitherto considered worthless.

England having cut off the supply of gasoline and petroleum, and although benzol will satisfactorily replace the former, two synthetic processes have been worked out for producing gasoline which will play a large role in the future. A process for making gasoline from mineral oils has been simplified and a large plant will soon be operating. A second new gasoline manufacturing process has been invented by a professor in a prominent technical school, based on the assumption that if hydrogen be added to unsaturated hydrocarbons, gasoline will be formed as in nature. Bituminous coal being regarded as unsaturated hydrocarbons, it is proposed to add hydrogen to these and make gasoline, a new plant for which is expected to be in operation soon. Petroleum is being replaced by acetylene, which can be burned in safety lamps more cheaply.

To offset the shutting off of the supply of saltpeter or Chilean nitrates and thereby the manufacture of important explosives, very large works are being erected to convert the nitrogen of the air into ammonia and this into nitric acid by the contact process.

Sulphuric acid having become so expensive, ammonium carbonate made by the Haber process is permitted to come in contact with gypsum, which by a complete reaction forms ammonium sulphate and calcium carbonate. Germany's large deposits of magnesium sulphates are to be similarly used. Also by decomposing magnesium or barium sulphates with coal the sulphide is formed which is further decomposed by carbonic acid into barium carbonate and hydrogen sulphide, which by suitable combustion is transformed into sulphurous acid or sulphur. The sulphuric acid made from this is exceedingly pure and the supplies of barium sulphate are enormous.

The recent annual meeting of the stockholders of the Joseph Dixon Crucible Company, Jersey City, N. J., resulted in the re-election of the former board of directors, as follows: George T. Smith, Robert E. Jennings, George E. Long, E. L. Young, William G. Bumsted, J. H. Schermerhorn and Harry Dailey. The officers elected by the board of directors are: President, George T. Smith; vice-president, George E. Long; treasurer, J. H. Schermerhorn; secretary, Harry Dailey; assistant secretary and assistant treasurer, Albert Norris.

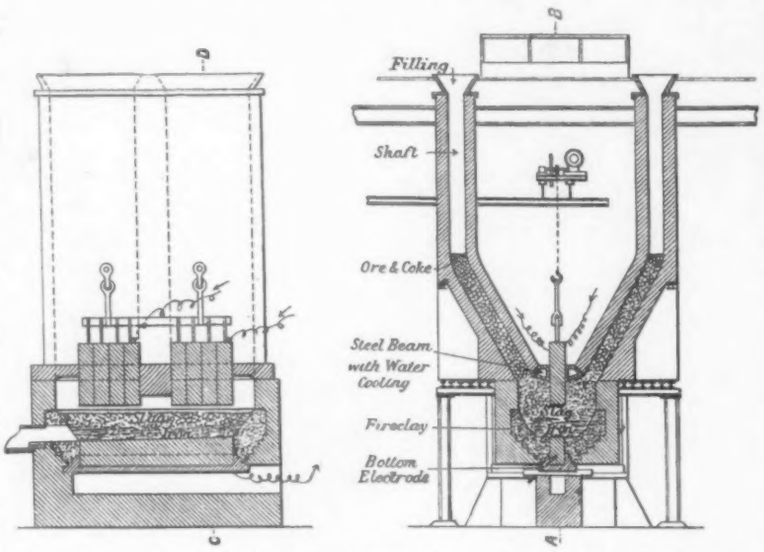
ELECTRIC PIG IRON IN NORWAY

A New Type of Furnace Using Coke Successfully —Cost Data

In Norway, where electric power is generally regarded as considerably cheaper than in Sweden, the development of the electric pig-iron industry has been much slower than in Sweden, where the adoption of electric furnaces for the reduction of iron ore is apparently spreading. The conditions in the two countries are different. In Sweden charcoal is used as a means of reduction, but in Norway it is too expensive and unless coke can be used the process cannot be worked to advantage. The first attempt with coke at Hardanger, Norway, proved so unsuccessful that it was abandoned, though the ores used were rich in iron and easily reducible.

In a recent article in London Engineering the successful attempts to use coke in a new type of furnace in Norway are described as follows:

At the Tinfos Iron Works, Notodden, Norway, a regular and remunerative manufacture of electric iron has been going on for some time, and the production for the present year is estimated at 10,000 tons. This satisfactory result is all the more noteworthy inasmuch as the ores used are rather poor in their percentage of iron, but otherwise are what may be called good ore, coming from three mines—Klodeberg, Grevinde Wedel and Fon Anker—averaging some 45 per cent. of magnetic iron ore.



Two Sectional Views of the Electric Pig-Iron Furnace of the Tinfos Iron Works, Notodden, Norway, in Which Iron Ore Is Successfully Reduced to Pig Iron Using Coke as a Fuel

The illustration shows the Tinfos electric furnace as used in the first three furnaces. It differs from the Swedish furnace used at Trollhättan in having a shaft on each side, so that the ore is led on to the two square electrodes. The upper electrodes each consist of three or four smaller ones. The electric current proceeds from the electrodes through the charge, the slag, and the liquid pig iron, down to the bottom electrode. This furnace, consequently, differs from the Swedish furnace, not only in having a bottom electrode, but also in having no gas circulation and requiring very little water for cooling purposes. The fourth furnace differs from the three others in having three heavy round electrodes, with nipples. The question of a furnace with but one shaft is by no means excluded.

The charge consists of iron ore, coke and, according to circumstances, limestone, the quantity of which depends upon the nature and blending of the ore, the quality of the coke, and the quality of pig iron wanted. Charcoal is not used.

Two years' patient experimenting in different directions, and not always under the most favorable conditions, have led to the production of pig of high quality, strong and comparatively tough. Even at an early stage of the experiments it could be ascertained that the iron produced promised exceedingly well, due to certain good qualities in the ores used.

When coke is used the shafts of the furnace need not be very high, and as a rule the charge does not reach higher than a little beyond the bend in the shaft. The upper part of the shaft serves as a chimney, which produces the necessary draft in the furnace. To fill the shafts higher with ore than shown in the illustration is not recommended when the ore contains zinc.

The Tinfos electric pig iron is close, being produced electrically, without any air being blown into the furnace. This pig can thus with advantage be used for all kinds of foundry castings which require much strength, such as cylinders, presses, pumps, propellers, etc., and it can with advantage be added to ordinary cheap and less strong pig, used in the foundries with or without addition of ferrosilicon.

Tinfos pig, inasmuch as its chemical composition can be altered and regulated, can also profitably be used in making basic open-hearth steel, for all electric steel, or for softened castings. Among the different Tinfos pig irons are the following:

Silicon, per cent.	Manganese, per cent.	Sulphur, per cent.	Phosphorus, per cent.
0.3	with 0.1 to 1.0	0.03 to 0.1	0.02 to 0.04
0.4 to 0.8	with 0.1 to 1.0	trace to 0.04	0.02 to 0.04
1.0 to 1.5	with 0.1 to 1.0	trace to 0.02	0.02 to 0.04
1.0 to 1.5	with 1.5 to 2.0	trace to 0.02	0.02 to 0.04
1.5 to 2.0 } 2.0 to 2.5 {	with 0.1	trace to 0.02	0.065

The cost of production, including ore, coke, limestone and electrodes, besides wages, crushing, weighing and transport of materials, mounting of electrodes, repairs, storage of iron, the laboratory and electric energy, can, according to what so far has been experienced, be kept at from 73s. to 75s. 6d. ($17.76 to $18.37) per ton of pig iron (perhaps based on cheaper coke than present quotations) when all three furnaces are kept going, exclusive of management, sinking fund and taxes.

From the beginning of the present year all four furnaces have been worked regularly, one being always kept in reserve. Each furnace produces about 9 tons per day, or 27 tons for the three, making some 10,000 tons per annum. The percentage of pig iron from the ore varies from 44 to 47 per cent., according to the quality of the ore. The current in the furnace may be as much as 1200 to 1400 kw.

New Smelter for Bolivian Tin Ores

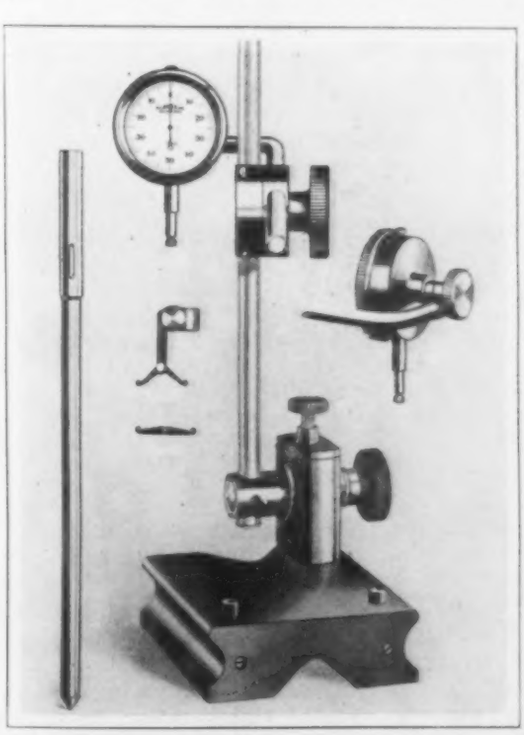
A bulletin of the foreign trade department of the National City Bank, New York, says: "Reports current on the west coast of South America indicate that a company has been organized in Chile to construct works for the smelting of the tin ore of Bolivia at Arica, in the extreme north of Chile. Formerly most of the tin ore of Bolivia reached the coast at Mollendo in southern Peru, in the form of a 'concentrate,' and was there put aboard ships and sent to Europe for smelting, since the cost of coal on the Pacific coast of South America had rendered smelting extremely expensive. Much of the coal used on the central and northern Pacific coast has been in the past imported from Australia or England, but the opening of the Panama Canal gives a short route from the coal ports of the United States with the advantage that ships carrying the coal to the smelter can bring back the smelted tin to our market, which now imports annually nearly $50,000,000 worth of pig tin."

At a recent meeting of the Detroit Foundrymen's Association, J. Roy Wilson, of the Davis-Burnonville Company, read a paper on "Oxy-Acetylene Welding and Cutting as Applied to the Foundry and Sheet Metal Industry." It was accompanied by a set of moving pictures entitled "A Knife of Fire," which showed the oxy-acetylene flame in actual practice.

A New Dial Test Gauge for Toolmakers

The B. C. Ames Company, Waltham, Mass., has recently brought out a test gauge of the dial type. It is intended for use with a surface gauge, such as forms a part of practically every machinist's equipment. This part, which serves as the base, is not furnished, as it is considered unnecessary. Among the uses to which the gauge can be put are the laying out of jigs and fixtures and testing duplicate pieces for thickness, etc., in connection with a surface plate.

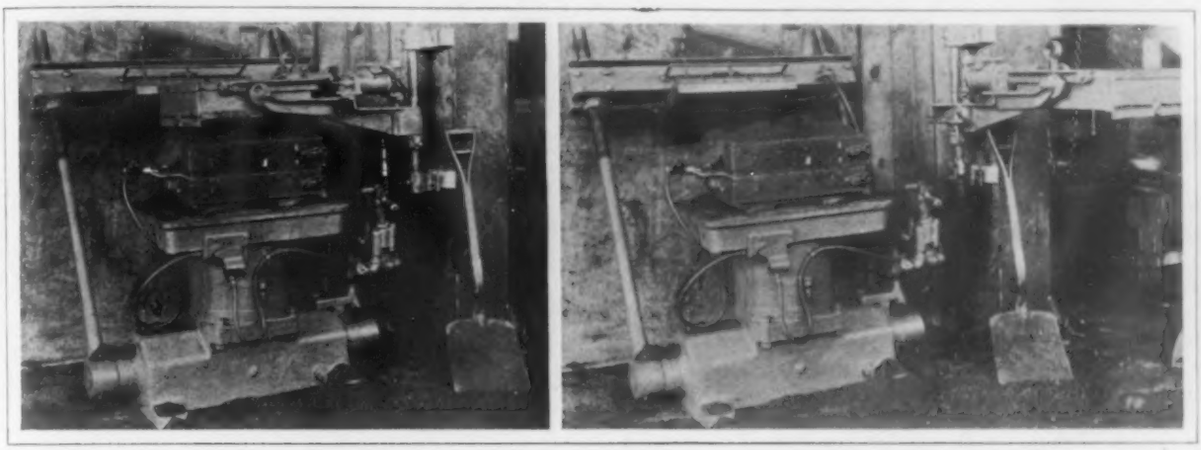
The upper portion of the gauge is one of the maker's standard dial gauge heads with a clamp and rod to fit any surface gauge. The rods furnished with the gauge are either 5/16 or 3/8 in. in diameter. This gauge, it is pointed out, can be used wherever the surface gauge can and will register on the dial the exact amount that the work is out. It is adapted for the testing of machine tools as well as bearings, spindles, slides, holes or centers. It can also be used in connection with a planing or flat grinding machine to gauge the parts being made. When used for this purpose, it is pointed out that it is unnecessary to remove the work from the platen to measure it. Two types of gauge are made, one graduated to read to 0.001 in. and the other to read to 0.01 mm.



A Recently Developed Toolmakers' Test Gauge of the Dial Type

Pneumatic Sifter for Molding Machines

The Hanna Engineering Works, 2061 Elston avenue, Chicago, Ill., has brought out a pneumatic sifter for molding machines. It can be employed for applying facing sand to molds and can be cleared of coarse material by raising one end of the frame. An automatic valve controlling the air supply to the sifter is furnished.



Two Views of a Recently Developed Pneumatic Sifter for Molding Machines That Swings on a Vertical Shaft Showing It in Position Over the Flask and Swung Away Prior to Squeezing the Mold

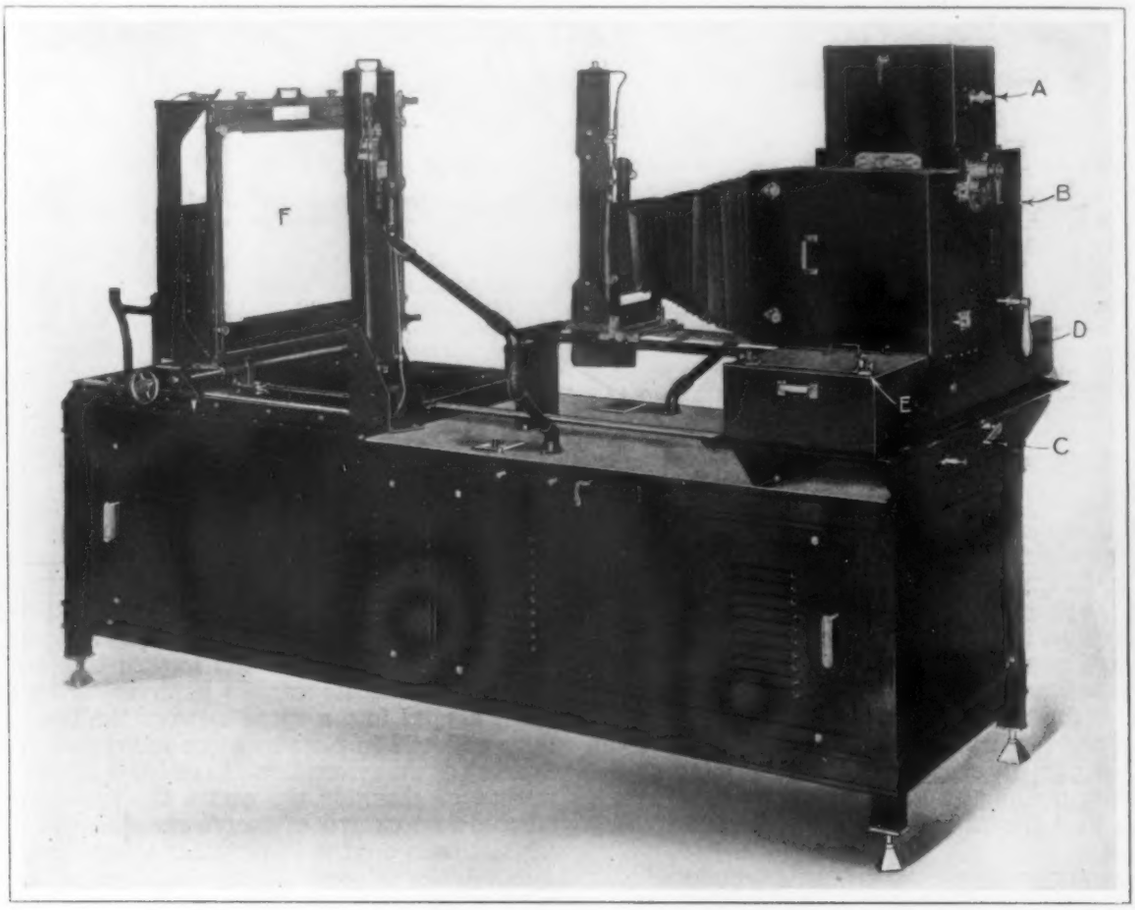
The screen box is rectangular in shape and can be supplied in two sizes, either 9 x 12 in. or 12 x 14 in. The arrangement of the box is such that screens of different meshes can be used, the wire cloth being slipped into a space between the two angle irons and held in place by a cap screw and washer in front of the screen box. In addition to this easy method of changing the screen the sifter can be dumped and cleared of coarse material by lifting one end from the frame, the other swinging on two bolts. When in operation, the loose end of the box is held in place by a spring catch.

The sifter swings on a vertical shaft held in brackets fastened to a wall post. An automatic valve which admits air to the cylinder for starting the sifter when it swings into place over the flask and cuts off the supply when the sifter is swung back out of the way, is included in the equipment. The sifter can also be furnished with a screen holder to accommodate an 18-in. riddle. It is pointed out that the capacity of any of the screen boxes is sufficient to accommodate sand enough for several molds. In this way the fatigue incident to lifting a full riddle above the flask for each mold when hand riddling is employed is eliminated.

The Goodyear Tire & Rubber Company, Akron, Ohio, is manufacturing the Everlast compressed sheet for high pressure work, such as superheated steam, joints for gasoline engines, etc. The plant for its manufacture was equipped about two years ago, in accordance with the ideas of an experienced man who had received his training abroad, and with confidence that a market could be found for a strictly high grade article. The product has proved so satisfactory in the matter of tensile and service tests, at a fair price, that the department is running day and night and arrangements have been made to treble the output in order to meet the growing demand.

Photographing on Both Sides of a Sheet

A machine capable of taking two separate photographs at the same time and printing them on the opposite sides of the same sheet and in addition developing and fixing the photographs by the manipulation of a crank and a lever with the final delivery of the completed print cut ready for drying and without immersing the hands in chemical baths or water has been brought out by the Cameragraph Company, Kansas City, Mo. It is a development of other machines made by the same company, all with the mechanical developing and fixing equipment, and one of the special fields which it intended to fill is that requiring the copying of books. As a whole the products of the company stand as a mark of the growing popularity of the photographic camera for securing and maintaining records in industrial plants and mercantile establishments.



Machine Built by the Cameragraph Company, Kansas, City, Mo., for Reproducing Drawings, Blueprints, Documents or Records as from Books. Two Pages or Two Drawings May Be Photographed Simultaneously on Opposite Sides of the Same Sheet. Focussing, Loading, Developing and Fixing All Done Mechanically

With a machine taking a sensitized paper, which is developed, the glass negative or film is done away with, and the kind of emulsion used on the paper, particularly when color screens are used, has shown that blue prints are successfully reproduced and various colors, even in pencil, have been recorded by the photographic paper. The machine is, of course, operated by hand and uses mercury vapor lamps for illuminating the subject. Mechanical focusing is provided for with graduated scales in that connection. The accompanying illustration shows one of the first of the newer machines, the chief difference between this and the latest being that the base is made in the form of a table instead of providing the cabinet in the base, which gives the machine an unnecessarily massive appearance.

The way the machine gives the double photograph is in brief as follows: The rays of light from one-half of the subject, say to the right of the median line, or a right-hand page, in passing through the lens are focused on the left side within the camera. If instead of a piece of sensitized paper or a plate, the light rays are focused on a mirror at 45 deg. to the regular position of the plate and the rays are reflected against a vertical plane lying in the main axis of the machine, a plate or the sensitized paper could be left in that position and an impression of the half would be obtained if say the other half of the subject were blocked off in some way. If, however, each side of the camera has the 45-deg. mirror and the light sources are of identical intensity or substantially so, and a paper is held in the vertical axial plane of the machine, an exposure would be made on the two surfaces of the paper, one of the light rays through one-half of the lens and the other of the light rays through the other half of the lens.

Referring to the photograph, A is the box in which the photographic paper is stored, as in a continuous roll, ready for use. Incidentally the machine may, of course, be used for reproductions on one side of the paper only, using paper with one sensitized surface. The duplex paper is incidentally a development of the Cameragraph Company, which ordinarily leases the machines and sells the paper to the user. At B is the crank by which paper is fed vertically downward ready for the exposure. This mechanism is graduated so that measured quantities of paper may be fed according to the size of the photograph to be made. After the exposure the crank B is turned to force the paper into the developing bath below and a new supply of paper is in a position ready for exposure, so that duplica-

tion at a high rate of speed is possible or a rapid change of copy may be made as say the turning of the next page of the book being photographed. At the end of the development, say 30 sec., the crank C is turned, this operation taking the print from the developer and allowing the fixing bath to receive it, meanwhile the paper being cut by means of a short turn of the lever D. The crank C moves the fixing bath to and fro, so that the bath sweeps the print as in ordinary photographic practice. The cover E gives access to the completed print, which, of course, is a negative, but by the use of the mirror is equivalent to a reversed negative so that writing, for example, may be read directly.

The machine is made up largely of German silver, to secure resistance to all kinds of corrosion in addition to that of the atmosphere, and an unusual effort apparently has been made to guarantee durability and workmanship, the last evidenced in the finish, in the character of the hinges and other fixtures, in the articulated joints, such as the covers and sliding fits to secure tightness against light transmission, and in details like the adjustable feet which have little jacks for leveling up the machines. A mercury vapor light is used on each side, each mounted on a bracket of a sufficient number of joints to secure the desired distribution of light. The subject holder is arranged to take a heavy book so that pages 2 and 3 for example may remain in the subject plane, although the book may have 1000 pages.

GLASS CHIP GUARD AND BOX

Two Suggestions for the Safety and Health of Machine Shop Employees

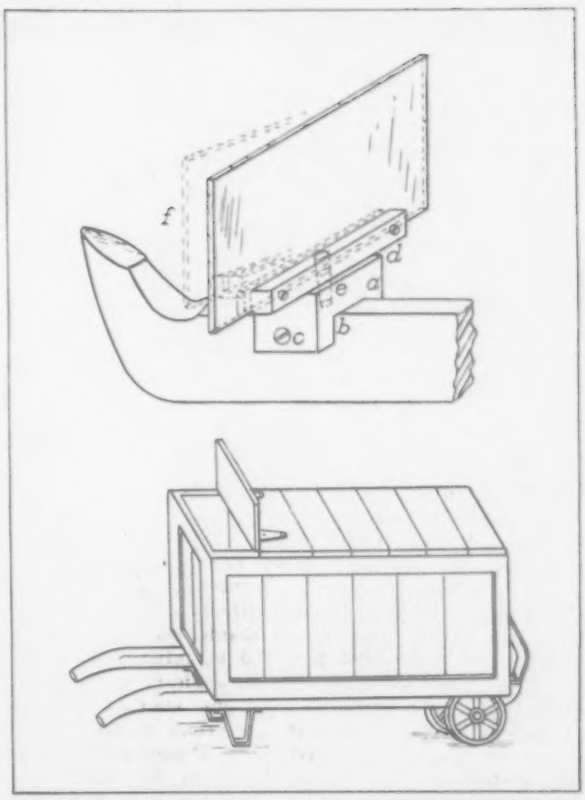
BY JAMES E. COOLEY

Many accidents to the eyes are caused by chips that fly away from the edge of the cutting tool while stock is being turned up on a lathe. It is a dangerous practice for workmen to stand near work of this kind without first placing a suitable guard over the tool to retard the movement of the chips.

Some workmen place cardboard or a piece of tin over the tool to shield them from the chips, but this not being transparent obstructs the view of the work. Guards with a glass are used to some extent but these having no adjustment cannot be properly set and must always remain at right angles to the cutting edge of the tool regardless of the direction in which the chips fly.

The direction in which chips move away from a tool is subject to the angle in which the tool is ground. It is seen by this that a guard should be provided so that it can be adjusted and set at right angles to the direction from which the chips fly outward.

In the accompanying sketch is shown a glass chip guard that can be adjusted, and is made from materials easily obtainable in any machine shop. It consists of a steel block, *a*, having a groove, *b*, which fits over the tool and is fastened by the headless screw *c*. A narrow strip of stock, *d*, serves as a holder for the glass plate. The glass is placed in the slot provided for this purpose and held in place with two small headless screws, as shown. On one side of the center of the stock *d*, is driven a taper pin, *e*, which fits in a taper hole in the block *a*. By turning and then crowding down on the pin a little in the taper hole the guard can be firmly set in any position desired, as suggested in the dotted lines *f*.



An Adjustable Glass Guard to Protect a Lathe Operator from Flying Chips and a Box for Removing the Cast-Iron Chips That Accumulate under Planing and Milling Machines

Chips from cast iron accumulate rapidly under planing and milling machines, etc., especially when fast feeds and high-speed tools are used to finish off several pieces of work in one setting, and the chips must be gathered up and carried away frequently.

Although this work is done regularly, the method employed in doing it is given very little concern and attention, and it is far from what it should be. It is well known that a great deal of dust comes from these chips, and because of this considerable care should be exercised in handling them.

The usual practice followed in collecting these chips is to place a box on a two-wheel truck, draw the truck up near a machine and shovel the chips into the box. Usually this box is one picked up and used because it conveniently holds the chips, but it is anything but dust-proof. As each shovelful of chips falls in the box, a cloud of dust rises and is inhaled by the workmen. It gets in the belts and bearings and a layer is deposited on all tools and fixtures and everything within striking distance.

All this is unnecessary and can be prevented. If a box is made up purposely for this as shown in the accompanying drawing this dust nuisance will be done away with. It is seen that the box is boarded over on the top with the exception of a small opening to receive the shovel, and having a door to keep the dust down. Immediately on placing a shovelful of chips in the box, the door is closed down. If the box becomes too full at the opening, raising the truck at the handles will cause the chips to fall forward.

Recent sales reported by the Kerr Turbine Company, Wellsville, N. Y., include the following: Carnegie Steel Company, Farrell, Pa., 125 hp. turbine; Jones & Laughlin Steel Company, Woodlawn, Pa., 325 hp. turbine; National Tube Company, Christy Park works, McKeesport, Pa., 350 hp. turbine, as well as turbo-pumps and turbo-generators for a number of cities. Export orders have been received for shipment to England and Argentina.

Congressional Action on War Problems

Possibility of Emergency Legislation on Finances and the Shipping Situation —Views on Extra Session Questions

WASHINGTON, D. C., May 18, 1915.—The tense situation resulting from the destruction of the Lusitania by a German submarine serves to emphasize the lack of preparedness on the part of the Government to undertake military operations, either offensive or defensive, and the inability of the Treasury to supply funds for any such purpose, even under existing appropriations which, in the current final quarter of the fiscal year, have been drawn down to a very low ebb. As a result serious consideration is being given both by administration officials and Congressional leaders to the desirability of summoning Congress in extra session in the very near future. The Treasury balance is now at an unprecedentedly low ebb; the existing revenue system can provide no sinking fund to justify a bond issue; the President is without authority to take steps which may become advisable, even if war is avoided, and legislation designed to relieve the transportation situation in our foreign trade is imperatively demanded. In addition, prominent leaders of both houses are of the opinion that a broad statute should be enacted immediately, giving the President power to place embargoes, not necessarily upon the exportation of munitions of war, but upon shipments of food products, either as a form of reprisal or to safeguard the food supply of our own country. Senators and Representatives holding important committee assignments have been quietly arriving in Washington during the past few days and others who have been abroad have started homeward to be within call should the President desire to summon Congress on short notice.

Should diplomatic relations with Germany be severed, a possibility that must be seriously considered; or should there be a repetition of the incidents against which this Government is now protesting, prompt emergency legislation would be demanded to provide the Executive with funds required to take all necessary steps to protect American citizens and to prevent the interruption of our foreign commerce. While the Secretary of the Treasury has authority to sell bonds in certain contingencies, he cannot use the proceeds for any purpose not specifically provided for by law; hence, if money is needed for any purpose not contemplated by existing statutes Congress must come to the rescue. But Congress can not appropriate money not in the Treasury and even should it direct the flotation of a bond issue it must immediately provide a sinking fund by enacting additional revenue legislation.

NO EMERGENCY FUNDS IN THE TREASURY

There is absolutely no money in the Treasury for any emergency purpose. The cash balance today is approximately $15,000.000, or less than one-third the minimum sum heretofore regarded as the limit of safety in times of profoundest peace. Considerable payments on account of income and corporation taxes will be due late in June and early in July, but most of this money will be promptly checked out early in the new fiscal year under the terms of the appropriation acts which become effective July 1. The total deficit now shown on the Treasury ledgers is in excess of $130,000,000, exclusive of the estimated postal deficit of $20,000,000, making a shortage of more than $150,000,000 as of this date. This deficit is due in large part to decreased customs returns, the loss on which to date is nearly $80,000,000 as compared with last year. Of this loss about one-half is attributable to decreased importations, but the remainder is solely due to the reduced rates of duty provided by the Underwood-Simmons tariff act. While the revenues have declined, the disbursements have increased heavily, the expenditures of the current fiscal year to date exceeding those of last year by more than $31,000,000, in spite of Executive and Congressional pledges of economy. These figures are rendered positively startling when the fact is borne in mind that the emergency war revenue act, estimated to produce $80,000,000 per annum, has been in effect for nearly eight months and the customs officials are still collecting 75 per cent. of the Payne-Aldrich rates on sugar, which goes on the free list May 1 next. No one looks for a comprehensive revision of the tariff at this time and every political precedent is opposed to an overhauling of the schedules next winter, which would result in placing a new tariff law on the statute books just before the next Congressional and Presidential election, but obviously something must be done and as an independent proposition the sooner it is done the sooner the Treasury will be in position to meet both ordinary and unusual demands. The President has received many communications during the past week urging the prompt summoning of Congress to meet the revenue situation and Chairman Stone, of the Senate Foreign Relations Committee, who is also an influential member of the Finance Committee, is here in conference with Treasury officials. While for obvious reasons the suggestion of an extra session is discountenanced, it is nevertheless receiving very serious consideration.

ACTION WANTED ON MERCHANT MARINE

In the communications received by the President from business men there have been many that suggest the prompt summoning of an extra session of Congress to provide some means of rapidly developing the American merchant marine. Few, if any, of the writers of these letters desire a law authorizing the Government to purchase and operate steamships. The impression seems to be quite general that, unless Germany gives the assurances demanded by President Wilson, extraordinary risks will be incurred by those who ship their products in merchant vessels belonging to the belligerent countries. According to the declarations heretofore made by the German Government, all the merchantmen of the belligerent nations are lawful prizes and if they are armed as naval auxiliaries or are suspected of carrying cargoes made up in part of munitions of war, they are liable to be sunk without warning. The President is being urged, therefore, to call Congress together to pass a law extending generous aid to American ship owners, present and prospective. As a substitute for Government ownership, one suggestion involves a system of Government loans at very low interest rates, secured by some form of mortgage upon vessels to be built or purchased and operated in the foreign trade, subject to such federal supervision as the Interstate Commerce Commission exercises over the railroads.

While there is little reason to believe that the coming Congress, either in special or regular session, will resurrect the administration's ship purchase bill, which was defeated in the Senate last March, there can be no doubt that the problem of the development of the American merchant marine will receive most serious consideration in both houses in view of the hazardous risks under which our commerce has been carried on since the beginning of the European war.

One important effect that would probably follow either open hostilities with Germany or the severance of diplomatic relations would be a closer commercial intercourse with the allies that would undoubtedly result in the lifting of all embargoes upon products required by American manufacturers, especially those consumed in the production of munitions of war. There is good reason to believe that under such conditions the British Government would do away with the restrictions on ferromanganese and facilitate its shipment to the United States. Another result would be

the removal of all restrictions upon the use of American capital by the allies in financing the war, which would reciprocally operate to increase the volume of war orders to be placed in the United States.

W. L. C.

A. S. M. E. Spring Meeting Programme

The spring meeting of the American Society of Mechanical Engineers will be held at Buffalo, N. Y., June 22-25. The headquarters during the meeting will be at the Hotel Statler, where most of the sessions and entertainment features will be held. There will be the usual informal reception on the evening of Tuesday, June 22. The opening session on Wednesday morning will be held at the auditorium of the Shredded Wheat Biscuit Company, Niagara Falls, the papers at this session being provided by local engineers. The afternoon will be devoted to visiting the industries grouped at that point as well as the Falls themselves. The lecture Wednesday evening will be given by Dr. F. H. Newell, formerly chief of the United States Reclamation Service. The address will be on "The Engineer as a Citizen," and will be a presentation of the duties and standing of the engineer and his relation to the public. It will be illustrated by colored lantern slides, showing the important work which the Government has done in reclaiming great areas of arid land in the West. On Thursday morning there will be two simultaneous sessions for the discussion of papers, the afternoon and that of Friday being left open for visiting manufacturing plants in Buffalo. The usual dance and reception will be held on Thursday evening, and on Friday morning the final professional session of the meeting will be held.

The papers that have been thus far announced for presentation at the meeting are as follows:

Laps and Lapping by W. A. Knight and A. H. Case.

Model Experiments and the Forms of Empirical Equations by E. Buckingham.

Influence of Disk Friction on Turbine Pump Design by F. zur Nedden.

A Study of an Axle Shaft for a Motor Truck by John Younger.

Corrugated Furnaces for Vertical Fire Tube Boilers by F. W. Dean.

The Effect of Relative Humidity on an Oak Tanned Leather Belt by William W. Bird and Francis W. Roys.

The Relation Between Production and Costs by H. L. Gantt.

Design of Rectangular Concrete Beams by Howard Harding.

Some Mechanical Features of the Hydration of Portland Cement and the Making of Concrete as Revealed by Microscopic Study by Nathan C. Johnson.

Surface Condensers by Carl F. Braun.

The arrangements for the entertainment are in the hands of a large local committee, of which David Bell, engineer Buffalo Foundry & Machine Company, is chairman. The Engineering Society of Buffalo will join with the local members of the American Society of Mechanical Engineers in acting as hosts during the meeting.

The Xenia Rubber Mfg. Company, Xenia, Ohio, has purchased the entire assets of the Springfield Tire & Rubber Company and Springfield Elastic Tread Company, both of Springfield, Ohio, and intends to move the equipment into a new factory at Xenia. Their entire lines will be made at the new factory. Of special interest is the patented Springfield abrasive polishing wheel, for high polish work on jewelry and machinery, also for dental work, and in its different forms is put to a great variety of uses. This purchase will give added machinery and equipment, very much needed, and will greatly enlarge the activities of the company.

The Bridge Builders and Structural Society, 50 Church street, New York, announces that at the monthly meeting of the society, held in Chicago, May 13, it was shown from the records collected by Secretary George E. Gifford that in the month of April 62½ per cent. of the entire capacity of the bridge and structural shops of the country was contracted for.

Mississippi Valley Scrap Rates Up

WASHINGTON, D. C., May 18, 1915.—The Interstate Commerce Commission has vacated the recent order suspending tariffs increasing the carload rates and minimum carload weight on scrap steel and iron from the Mississippi Valley and certain Gulf ports to St. Louis, Ohio River crossings and points beyond. The protestants, at whose instance the tariffs were suspended, are dealers in scrap at New Orleans, St. Louis and Chicago. The principal defendants are the Illinois Central, Yazoo & Mississippi Valley, Mobile & Ohio, Alabama & Vicksburg and New Orleans & Northeastern railroads. Their contention is that the present rates have been too low and have not been satisfactory for a number of years and that no uniform basis has been observed in constructing them.

The principal markets for Southern scrap iron, the commission states, are St. Louis, Cincinnati and Chicago. More than 500,000 tons are consumed annually in St. Louis alone. The commission, therefore, considered the present and proposed rates to St. Louis as typical, as the proposed rates to practically all other destinations are made with relation thereto. From points south of Memphis it is proposed that Louisville and Henderson, Ky., and Evansville, Ind., shall take St. Louis rates; Cincinnati, 30c., and Chicago, 50c. over St. Louis; Paducah, Ky., and Cairo, Ill., 50c. under St. Louis. The present and proposed rates from New Orleans to St. Louis are $2.82 and $3.50 per ton respectively.

The protestants insisted that scrap iron is a commodity that requires low rates; that it is sold on a small margin of profit, varying from 15 to 50c. per ton, and that if the proposed increased rates were allowed to become effective it would be impossible to move this traffic thereunder. The commission finds, however, that the record does not support the contention that the proposed rates will prohibit a movement of this traffic. It was further urged by the protestants that water competition still exists and for that reason the rail rates should not be increased, but the commission has uniformly held that it is for the carrier to determine whether or not it will meet such competition. If it elects to discontinue this practice at any point and increase its rates, the commission is concerned only in the question of whether or not the increased rates are just, reasonable and proper.

It was proposed to increase the minimum carload weight on scrap from 30,000 lb. to 40,000 lb. To this the commission makes no objection. The average loading of scrap is about 50,000 lb. and protestants admit that they experience no difficulty in loading 40,000 lb. on interstate shipments. The respondents asserted that there is through water service practically the entire year between Memphis and St. Louis and Ohio River crossings, and contended that the possibility that the scrap traffic from Memphis might be diverted to water carriers rendered it inadvisable to increase the Memphis rates more than 25c.

Certain points north of Memphis and not on the Mississippi River now have, and under the proposed adjustment will have, rates higher than those from Memphis. For example, from Felts, Tenn., the first station north of Memphis, the rate is $2.56 to St. Louis, and it is proposed to increase it to $2.81. The relationship between Memphis and these points will not be changed, as the rates from practically all of them will also be increased 25c. These departures from the long-and-short-haul rule are protected by applications on file with the commission, which will receive consideration in due course, and are not here passed upon. Some such departures also appear in the rates from several points south of Memphis. Respondents explain that these have been published by mistake and will be promptly removed. This, the commission states, will be expected.

From a consideration of all the facts and circumstances of record the commission is of the opinion that respondents have justified the proposed increased rates and minimum carload weight on scrap steel and iron, and an order will be entered vacating the order of suspension as of May 26, 1915.

W. L. C.

ESTABLISHED 1855

THE IRON AGE

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Published Every Thursday by the DAVID WILLIAMS CO., 239 West Thirty-ninth Street, New York

W. H. Taylor, *Pres. and Treas.* Charles G. Phillips, *Vice-Pres.* Fritz J. Frank, *Secretary* M. C. Robbins, *Gen. Mgr.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: Equitable Building. Philadelphia: Real Estate Trust Building. Cleveland: New England Building. Cincinnati: Mercantile Library Building.

Subscription Price: United States and Mexico, $5.00 per year; to Canada, $7.50 per year; to other foreign countries, $10.00 per year. Entered at the New York Post Office as Second-class Mail Matter.

Machine Tools After the War

Still there is discussion of what will become, when hostilities end, of the tremendous amount of metal-working machinery now being absorbed for purposes having wholly to do with the war. One view is that the market will be glutted with second-hand tools. The manufacturers do not believe this will be the case.

The machinery now being sold may be divided into two classes: the standard types and the special. Many of the former have been adapted in a somewhat special way, but looking into the future their usefulness is not seriously impaired. The great elemental factor is that all sorts of machines which are operating in the manufacture of war materials are being pushed beyond their normal capacities, many of them to a limit that means utter destruction in a relatively short period of time. Builders of such equipment as engine lathes and grinding machines characterize the treatment of their product under such manufacturing conditions as "brutal." Contracts like those for shrapnel are placed on a basis of delivery which makes necessary the highest speed of production, and usually the price paid is high enough so that the contractor can afford to sacrifice the future of his equipment.

Also, it should be taken into account that not only the new but the old machines are being used up. A great many established machine shops are accepting business, on direct orders or on sub-contracts, which requires the same high tension of production. Machinery may have to suffer, but the goods must be delivered on a date which means abnormal activity.

The conclusion seems entirely warranted that the country is not only using up its stock of new machine tools, but is making it certain that a great amount of older equipment must be replaced if its owners propose to maintain the efficiency of their plants.

March exports from the United States, of iron and steel products which are reported by weight in the statistics, amounted to 174,000 tons, or 30,000 tons more than those of February and 35,000 tons more than for January. It is probable that the April and May returns will show a near approach to the 200,000-ton rate predicted in these columns some time ago. War shipments are telling. Yet steel which enters into shrapnel and high explosive shells is not represented in the tonnages noted above. While shrapnel orders have only begun to excite the popular imagination in the past two months, a good many such orders were placed in this country in the fall of 1914. They should have begun to show in the export statistics of February and March. Yet one searches in vain in the statistics of exports of ammunition or any other of the classifications in which such shipments might be taken account of, for any increase in this year's shipments comparable with what supposedly resulted from the earlier orders placed here. Of iron and steel products reported by weight the March export statistics show an increase of but 14,000 tons over the 160,000 tons exported in March, 1914. That comparison scarcely warrants the emphasis that was put on exports as a factor in the March, 1915, operations of our steel works. The machinery trade's large contribution to the exports of the first three months of this year is properly represented in the statistical statements. Barb wire at 15,000 tons in March, 1915, showed an increase of 9000 tons over the preceding March, and steel bars at 17,000 tons an increase of 7000 tons. The shrapnel and other shell steel that went abroad in finished form would make a considerable increase in the tonnage of bars rolled in March for foreign use if it could only be found in the export statistics.

Spelter and Galvanized Steel Products

The spectacular advance in the price of spelter has not affected the cost of galvanized steel products as much as might have been expected. Spelter has lately been selling at practically three prices, compared with the low point of last October, and at very nearly double the maximum price ever reached prior to this year; but galvanized steel products have not reached record prices by any means. Of the three prominent galvanized products, wire, pipe and sheets, the advance in spelter bears much the most heavily upon sheets, as the steel is relatively thin and the thickness of the coating is therefore proportionately great. Even this week's advance in galvanized sheets places the price of No. 28 gauge at only 3.60 cents. In the two general steel market advances of 1909 and 1912 respectively, galvanized sheets advanced to 3.50 cents, while in 1907 the price was fairly uniform at 3.75 cents, these historic high points being respectively $2 a ton lower and $3 a ton higher than the present market. One reason why galvanized sheets are not still higher is that black sheets are extremely low, being at 1.80 cents, whereas in 1907 they advanced to 2.60 cents, in 1909 to 2.40 cents, and on the 1912 movement to 2.35 cents. The present spread between black and galvanized sheets, 1.80

cents, or $36 a net ton, is the greatest that has obtained in 20 years or more.

According to the ordinary trade rules galvanized sheets at 3.60 cents are still too low in proportion to the market price of spelter. Average prices in the late months of last year, before the great spelter advance, may be taken at about 1.85 cents for black sheets, 2.85 cents for galvanized and 5 cents for spelter. One familiar rule is to allow an increase of $1 a ton in the spread between black and galvanized sheets for every 30 cents per 100 pounds that spelter advances. According to this rule an advance of 9 cents in spelter, from 5 cents to 14 cents, would call for an increase of $30 a ton in the $20 spread; whereby if black sheets were 1.80 cents galvanized sheets should be no less than 4.30 cents. It is evident, however, that this rule is more likely to be followed by the market when an advance in spelter is keeping company with advancing prices and increasing demand in all commodities. Advances in galvanized sheets in the past have been due in part to increased demand, the advance in spelter being partly incidental.

It is quite certain that the price of galvanized sheets is not being kept down at this time by the sheet mills having large quantities of spelter in stock or on contract at prices much below the present. It is known, indeed, that throughout the recent rise in spelter the majority of the independent mills, if not all, had greater obligations in galvanized sheet contracts than they had spelter with which to fill them. Some of the mills were filling contracts at large losses when they felt themselves unable to advance their selling prices because the sheets they were furnishing on contracts were being offered in the open market in competition with them. The experience will no doubt lessen the eagerness of the sheet mills in future to make large contracts with jobbers.

During the rise of spelter in the past few months there has been a difference of opinion among buyers as to the genuineness and probable permanence of the advance. The brass manufacturers appear to have become alive to the situation early, and to have bought brass special spelter very freely for long periods ahead. The galvanizing industries, on the other hand, found difficulty in taking the advance seriously. The difference in viewpoint was probably due in large part to differences in environment. The brass mills were enjoying an excellent trade and selling their product far ahead, while the galvanizing industries were suffering severely from the depression, and it was naturally more difficult for them to realize that any other industry was prosperous. The statistical fact, however, is that spelter exports of the United States, from practically zero before the war, increased so rapidly that in the seven months from September to March inclusive they averaged an annual rate of about 170,000 net tons a year, which is almost one-half the 346,676 tons the United States produced in 1913, although that production was the record. Naturally such a large additional trade could not be thrust upon the United States without the market feeling its effects. It is surprising, however, that the 64,000 tons of unsold stocks reported as in the hands of producers at the middle of last year should have been absorbed so quickly.

Foundry Pattern Insurance

Many manufacturers who have work done in outside foundries are not aware of the fact that if their patterns should be destroyed by fire the foundry owner is not legally responsible. Exceptions may be noted where special agreements are in effect, with the foundry operator assuming the risk Even in cases of this kind it is frequently impossible for the foundryman to insure to their full value the patterns in his charge, as insurance regulations only allow 15 per cent. of the total insurance carried on a plant and its equipment to apply on patterns.

An important provision that is inforced by the insurance companies concerns the amount paid on a fire loss for patterns. It is not generally understood that only the actual cost of the patterns is allowed and not the estimated value to the owner. Furthermore, the amount of loss sustained is arrived at by adding the cost of the material to that of the labor involved. It is therefore obvious that many firms overinsure their patterns, and the extra premiums paid are useless expenditures.

Another matter that deserves serious consideration, and one that is often overlooked by department heads, is the failure of the clerk in charge of the patterns to notify the insurance companies of the removal of patterns from one foundry to another. The change of location, without notification to the insurance company's representatives, invalidates the policy. As the fire hazard of foundries is not uniform, this rule on the part of the insurance companies is manifestly a just one, and, as can be understood, it frequently saves the manufacturer money on the amount of insurance premiums.

Credits and Foreign War Orders

The number and the volume of orders for war materials for foreign governments placed in the United States are so great that people who are not concerned directly, including not a few bankers, have had their interest aroused as to the credits which guarantee the business. A query is frequently heard as to what would happen should the war end unexpectedly, and even should the cessation of hostilities be discounted well in advance. Values to the amount of hundreds of millions are involved. Could the contracts be abrogated?

These credits are held to be as safe as those of the ordinary transaction of domestic business, and perhaps safer, because the element of cancellation is practically eliminated, presuming, of course, that American manufacturers continue to live up to the requirements of their contracts.

The war business may be divided into two classes—the one, the orders for equipment and materials placed direct by foreign governments or their American representatives, which class includes most of the larger contracts; the other, orders placed in the United States by those who are doing business with Europe. These sub-contracts, as they may be termed, considering them as a group, include all sorts of machinery and materials and also the actual war product or parts of it, which can be manufactured more economically or more expeditiously in this manner.

The contracts placed directly by foreign powers

usually carry a substantial cash payment in advance. The American manufacturer does not have to depend upon his own normal financial resources. For the remaining part of the contract price, deposits are made with New York banks, to be drawn against as the goods are delivered, f.o.b. the factory or the dock, as the terms may provide. Dealings, so far as the major contracts are concerned, are between the manufacturer and American banks. The contracts are specific in all details that guard against cancellations. Should war end tomorrow, these orders would be filled; at any rate, the manufacturer assumes no risk that would mean loss to him or to firms he may employ to assist him or from which he buys machinery and materials.

The suggestion has been advanced that the factor of inspection might become very important were the need of war materials to end and the buyer wish to decline further responsibility. Naturally all of these products must pass the inspection of representatives of the foreign governments, and these men might decline to accept them, by quibble and petty fault finding. While such an eventuality is not seriously considered, the possibility is one not to be neglected. Presuming that such a case should arise, the real issue would be between the producer and an American bank. Both of the parties and the money would be in the United States, and no international litigation would be involved. If the matter should go to the courts it is to be presumed the outcome would be equitable and the delay not extreme.

The sub-contracts, so-called, being with firms so well protected, are equally well provided for automatically. Where connection with war business is less direct, the manufacturer has the same methods of guarding his credits that apply in his ordinary trade.

Caution Regarding Foreign Correspondence

Prepayment of full postage on mail going to foreign countries is emphatically enjoined upon American manufacturers by both the Department of Commerce and the Post Office Department at Washington. It appears that many American business men are lax in conducting their foreign correspondence, failing to pay sufficient postage. Foreign countries require the collection of double the amount of the deficient postage upon the delivery of short-paid articles in international mails. This is highly exasperating to the receiver of the letter or other mail matter. The Post Office Department cautions the public that the only destinations to which the two-cent letter rate applies are Canada, Cuba, Mexico, Republic of Panama, the Canal Zone, Bahamas, Barbados, British Honduras, Leeward Islands, Newfoundland, Germany (by direct steamers only), England, Scotland, Wales, Ireland and the city of Shanghai, China, and that to all other places the rate is five cents for the first ounce or fraction of an ounce and three cents for each additional ounce or fraction of an ounce, which must be fully prepaid or the letters become liable on delivery to a charge of double the amount of the deficient postage.

Attention is also called to the international reply coupons purchasable at all post offices for the use of those who desire to pay return postage on answers to letters of inquiry addressed to foreign countries.

The Ohio works of the Carnegie Steel Company at Youngstown, Ohio, containing Bessemer and open-hearth plants and finishing mills, are running practically full this week, and its six blast furnaces are also in operation.

National Association of Manufacturers

The twentieth annual convention of the National Association of Manufacturers will be held in the Waldorf-Astoria Hotel, New York City, on Tuesday and Wednesday, May 25 and 26. Prominent manufacturers from all parts of the United States will assemble to discuss the effects of the year's political and economic developments, internal and international, on their business. Ex-President Taft, Senator Harding, of Ohio, and other speakers of national reputation, will deliver addresses. The subject of Mr. Taft's address is announced to be the "Clayton Act and Other Things." It is expected that the former President will avail himself of this opportunity to express to business men from all parts of the country his views on the present political situation. James A. Emery, of the National Council for Industrial Defense, will outline the work of the newly created Federal Trade Commission, and there will be a general discussion of the effect of the activities of this body on the manufacturing industry.

The Federal Commission of Industrial Relations, which has been investigating the causes of industrial unrest, will also receive consideration at the convention sessions. The attitude which this commission has assumed toward employers in general and the trend taken by the commission at its various hearings will be discussed by Walter Drew of the National Erectors' Association.

Particular public interest centers on the coming sessions of the National Association of Manufacturers, since this organization is the largest of its kind in the world. It has for many years maintained the largest private foreign trade bureau in existence, and the products of its members are sold in every country. The exact effect which the war has had on this trade will be discussed at the convention, and it is expected to throw some light on the nature of the growing balance of trade in favor of this country. There has been much speculation as to whether this was of an enduring nature or whether it was due only to the stimulus given some lines of industrial activity by demands for munitions of war by belligerent European powers. It is certain that our industrial life has undergone some drastic rearrangement since the outbreak of hostilities last summer and the manner in which readjustments were brought favorably about will be discussed. Reports of committees will be read on fire and accident prevention, union label, immigration, uniform State laws, trademarks and copyrights, and industrial betterment.

Incidental to the convention will be a unique exhibition devoted to various phases of industrial education, with students actually at work in various lines of industry. In this will be included exhibits from New York City, Newark, Fitchburg, New Haven, Altoona, Detroit and other places where well-known trade schools are established.

Central Iron & Steel Company's Affairs

Charles L. Bailey, Jr., J. V. W. Reynders and James Cameron, receivers of the Central Iron & Steel Company, Harrisburg, Pa., submitted May 11 their third annual report to the local county court. The company's plant was operated on a 40 per cent. basis and at a net loss of $116,439.10 in the year ended February 28, 1915. Operations, they state, were conducted under exceptionally unfavorable trade conditions, it being necessary to go back 16 years to find an approximate parallel for such a low standard of business, and in view of the very material increase in the cost of labor, fuel and supplies, the comparison becomes more significant.

Plans for reorganizing the company have been formulated by both the bondholders' protective committee and a similar one for the other creditors. If the plans are approved the receivers will be discharged. The plan contemplates the issue of bonds to provide money for necessary equipment, and continuing the business without the receivers. The securities to be issued are: First mortgage bonds, $1,800,000; debenture bonds, $1,300,000, and stock, $2,245,000.

C. M. Schwab on Steel-Making at San Francisco

(*Special Correspondence*)

SAN FRANCISCO, CAL., May 14.—Charles M. Schwab, chairman of the Bethlehem Steel Company, at a luncheon to-day tendered him by the San Francisco Commercial Club, said he thought it practicable to manufacture steel in San Francisco, having in mind the annual consumption of 600,000 tons on the coast. Few people, he said, realize the fundamental basis of transportation charges in general manufacturing; that one-third of the money going into the manufacture of iron and steel is for freight, one-third for labor and the remainder for general expense items. He reminded the local business men how important is the change arising out of all-water carriage through the Panama Canal. Formerly it cost $15 a ton to ship to the Pacific coast from the East. Then this was reduced to $13 by railroad trans-shipment over the Panama Railroad, "but," said he, "do you realize that in all probability the charge will be under $5 by shipping through the canal? Our investments in San Francisco have been eminently satisfactory. John A. McGregor (president Union Iron Works), who so ably represents us here, has been told he may go ahead if he can show us lines for expansion. My engineers and Mr. McGregor are working hard on the subject of steel manufacture. I have the liveliest hopes that the scheme is practicable; that is, profitable. The future of the coast is bright. The few years of depression will be more than counterbalanced by the years to follow. Do not be afraid to put money into legitimate business. The world at large is beginning to recognize that a step in economy of manufacture is a step toward permanence; and if there is economy in big business, big business is here to stay, despite legislation to the contrary."

Mr. Schwab suggested that the Pacific coast would be lined with the smokestacks of industry as is the Atlantic coast. He and his party leave Sunday night for Portland and will return to the East over the Canadian Pacific system. He is accompanied, among others, by Archibald Johnston, J. G. Schmidlapp, Cincinnati, and Commodore E. C. Benedict. W. W. M.

Westinghouse Company Buys Two Factories

The plants of the Stevens-Duryea Company in Chicopee Falls and East Springfield, Mass., and the J. Stevens Arms & Tool Company, Chicopee Falls, have been purchased by the Westinghouse Electric & Mfg. Company, Pittsburgh, and will be used for the present in the manufacture of a large order for army rifles for the Russian Government. This is one of three lots of 1,000,000 rifles each, the manufacture of which has been arranged, it is understood, through the British War Office. This first million is of a simple type, with comparatively few parts. It is understood that the Westinghouse Company will not undertake the entire manufacture of the rifles, but that considerable work on certain parts will be done by outside manufacturers. The finishing will be done at Chicopee. The plants are large and contain much modern machinery, to a great extent especially adapted to rifle making, for the J. Stevens Tool & Arms Company has for years specialized on firearms. The corporate name will not be changed. The Stevens-Duryea Company formerly built a high-grade automobile, but has constructed no cars in the past year. The Arms Company plant has about eight acres of floor space. The Stevens-Duryea factory at Chicopee Falls is a large one, and the building at East Springfield, never occupied, has 160,000 sq. ft. of floor space. The new owner has already contracted for a large amount of machinery and will be in the market for more in enlarging the capacity of the works and in fitting the equipment to its new purpose.

The LaBelle Iron Works, Steubenville, Ohio, has not yet placed a contract for a by-product coke plant. While the company has decided to build 80 by-product ovens, the type of oven has not been selected. It has also under advisement some large extensions to the present finishing mills.

CONTENTS

March Foreign Trade Values

The value of exports of iron and steel and manufactures thereof in March, 1915, according to the report of the Bureau of Foreign and Domestic Commerce, was $20,985,505, as compared with $16,470,751 in February and $18,053,421 in January. The daily average of such exports showed a notable increase, being $676,952 as compared with $588,241 in February and $582,368 in January. In the nine months ended with March, 1915, these exports were $142,291,994, only about 74 per cent. of the total for the corresponding period a year previous, when they amounted to $192,179,105.

The imports of these commodities amounted for the month to $1,457,932, as compared with $1,463,522 in February, $1,616,593 in January and $2,880,165 in March, 1914. While the totals for March and February are nearly equal, the greater number of days in March shows that the iron and steel imports decreased in volume. For the nine months ended with March these imports amounted to $17,173,084, against $23,226,291 for the same period the year before, or about 74 per cent. of the latter figure. Both exports and imports have therefore been cut down almost identically 26 per cent. during the nine months ended with March, 1915, from the same period a year previous.

Imports of iron ore in March amounted to 88,402 gross tons, against 78,773 tons in February, 75,286 tons in January and 68,549 tons in March, 1914.

The Iron and Metal Markets

LARGER RAILROAD BUYING

Pennsylvania Orders Are a Feature

Bar Mill Operations Increase—Galvanized Sheets and Ferromanganese Advance

It is still true that war possibilities figure but little in the steel trade. Some large negotiations have been halted for the time being and some structural contracts may be held up; but the mill operations of several companies have even been increased in the past week.

Without going into the eventual costs of a severance with Germany, the steel trade sees large immediate demands upon it in such an event, also what would come to it from the extension of large credits by this country to the Allies.

The Pennsylvania Railroad's orders for 14,043 cars and 50 locomotives and the indications that the distribution of 138,000 tons of rails will be made this week have had a good effect, disposing of the fear that these awards might be postponed and thus affect other railroad business. An interesting feature is the number of steel box cars included in these orders. For one lot 2500 tons of sheets has been bought by a car company and an equal amount will go into box cars to be built at Altoona. All told, the Pennsylvania car orders will give the mills 175,000 tons of finished steel.

Nearly half the 100,000 tons of rails Russia is to buy here has been covered by contracts. Of the Russian cars less than 8000 have been definitely placed. At the present rate of exports more than 200,000 tons of such iron and steel products as are reported by weight might easily be shipped in May, against 175,000 tons in March.

An advance in galvanized sheets to 3.60c. for No. 28 has resulted from the soaring market for spelter. Singularly, black sheets have weakened and from the same cause. Certain Ohio mills, having used up their stocks of spelter and being temporarily out of the galvanized sheet market, have more black sheets to offer. As against 1.80c., which has been considered the market, such mills have gone to 1.70c. and slightly less.

The structural outlook is not brilliant and the situation has been saved by public work which is going at remarkably low prices, much of it below 2c. The fabricating contracts of April represented 62.5 per cent. of capacity against 64 per cent. in March. Bids were taken this week on 14,500 tons of elevated work in Brooklyn. At Pittsburgh bids have been asked on 11,000 tons for a county bridge across the Ohio at McKees Rocks. The Missouri, Kansas & Texas has placed 2500 tons for bridges and the Louisville & Nashville requirements are put at 10,000 tons.

The situation in steel bars is probably stronger than in other leading products. With agricultural contracts still delayed, orders are coming from a variety of sources, including round lots for jobbers, and there is the continued pressure for shrapnel bars. On large rounds, deliveries are now three or four weeks off. There is a heavy demand from the automobile trade for forging bars.

The recent line pipe orders taken by the National Tube Company amount to 40,000 tons. Prices on this business were very low. One new contract calls for 57 miles of 16-in. line pipe for Texas. In the cast-iron pipe trade the leading interest has just booked 10,000 tons for Sacramento.

In the Pittsburgh district two barb wire makers are shipping about one-third of their product abroad. The spring lull in the domestic wire trade continues, but in view of light stocks it may not be so long drawn out as in other like periods.

The Canadian Government is in the market for 6000 tons of cold rolled strip steel for export.

The tin plate mills of large interests have been running well up to capacity, but new business is light and unless improvement comes soon some curtailment is inevitable. A Standard Oil inquiry for 300,000 boxes is looked for.

Pig-iron producers look for a quiet market, many foundries having put their requirements at the maximum in the heavy buying of April. Prices, while improved in spots, are not strong. For Southern iron, while $9.75, Birmingham, holds for far forward deliveries, $9.50 sales are still reported for deliveries running into the third quarter.

Our London cable reports an advance of £3 in ferromanganese, or from £17 15s. to £20 15s. Here the price has been $88 at Baltimore, but the only notification importers have from England is that this price is withdrawn. The 10,000 tons recently imported has eased the situation, and 30,000 tons of manganese ore is scheduled to come from Brazil.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month and one year previous

	May 19, 1915.	May 12, 1915.	Apr. 21, 1915.	May 20, 1914.
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia....	$14.25	$14.25	$14.25	$14.75
No. 2, Valley furnace...	12.75	12.75	12.75	13.00
No. 2 Southern, Cin'ti....	12.40	12.40	12.40	13.75
No. 2, Birmingham, Ala..	9.50	9.50	9.50	10.50
No. 2, furnace, Chicago*	13.00	13.00	13.00	14.00
Basic, del'd, eastern Pa..	13.25	13.25	13.25	14.00
Basic, Valley furnace....	12.50	12.50	12.50	13.00
Bessemer, Pittsburgh....	14.55	14.55	14.55	14.90
Malleable Bess., Ch'go*..	13.00	13.00	13.00	14.00
Gray forge, Pittsburgh...	13.45	13.45	13.45	13.65
L. S. charcoal, Chicago..	15.75	15.75	15.75	15.75
Billets, etc., Per Gross Ton:				
Bess. billets, Pittsburgh..	20.00	20.00	20.00	20.00
O.-h. billets, Pittsburgh..	20.00	20.00	20.00	20.00
O.-h. sheet bars, P'gh...	21.00	21.00	21.00	21.00
Forging billets, base, P'gh.	26.00	26.00	25.00	25.00
O.-h. billets, Phila.....	22.02	22.02	22.02	22.40
Wire rods, Pittsburgh...	25.00	25.00	25.00	25.50
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia..	1.17½	1.17½	1.15	1.20
Iron bars, Pittsburgh...	1.20	1.20	1.20	1.30
Iron bars, Chicago.....	1.15	1.15	1.15	1.10
Steel bars, Pittsburgh...	1.20	1.20	1.20	1.15
Steel bars, New York....	1.369	1.369	1.369	1.31
Tank plates, Pittsburgh..	1.15	1.15	1.15	1.10
Tank plates, New York..	1.319	1.319	1.319	1.26
Beams, etc., Pittsburgh..	1.20	1.20	1.20	1.15
Beams, etc., New York..	1.369	1.369	1.369	1.31
Skelp, grooved steel, P'gh	**1.15**	1.12½	1.12½	1.20
Skelp, sheared steel, P'gh	**1.20**	1.17½	1.17½	1.25
Steel hoops, Pittsburgh..	1.25	1.25	1.25	1.25

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

	May 19, 1915.	May 12, 1915.	Apr. 21, 1915.	May 20, 1914.
Sheets, Nails and Wire, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, P'gh.	1.80	1.80	1.80	1.85
Galv. sheets, No. 28, P'gh	**3.60**	3.40	3.25	2.80
Wire nails, Pittsburgh	1.55	1.55	1.55	1.55
Cut nails, Pittsburgh	1.55	1.55	1.55	1.60
Fence wire, base, P'gh	1.35	1.35	1.35	1.35
Barb wire, galv., P'gh	2.10	2.10	2.10	1.95
Metals, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	21.00	21.00	20.50	14.37½
Electrolytic copper, N. Y.	18.75	18.75	17.37½	14.12½
Spelter, St. Louis	**15.25**	14.00	11.35	5.00
Spelter, New York	**15.50**	14.25	11.50	5.15
Lead, St. Louis	**4.12½**	4.10	4.10	3.80
Lead, New York	4.20	4.20	4.20	3.90
Tin, New York	38.25	40.00	46.50	33.00
Antimony, Hallett's, N. Y.	none	40.00	32.00	6.85
Tin plate, 100-lb. box, P'gh	$3.15	$3.15	$3.25	$3.30
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$1.50	$1.50	$1.50	$1.75
Furnace coke, future	1.65	1.65	1.65	1.90
Foundry coke, prompt	2.00	2.00	2.00	2.40
Foundry coke, future	2.15	2.15	2.15	2.50
Old Material, Per Gross Ton:				
Iron rails, Chicago	11.75	11.75	11.75	12.75
Iron rails, Philadelphia	15.00	15.00	14.00	15.00
Carwheels, Chicago	9.75	9.75	9.75	11.50
Carwheels, Philadelphia	11.50	11.50	11.00	11.75
Heavy steel scrap, P'gh	11.75	11.75	11.75	11.50
Heavy steel scrap, Phila.	11.50	11.50	11.00	10.75
Heavy steel scrap, Ch'go	**9.50**	9.25	9.25	9.50
No. 1 cast, Pittsburgh	12.00	12.00	12.00	11.50
No. 1 cast, Philadelphia	12.25	12.25	12.00	12.00
No. 1 cast, Ch'go (net ton)	9.00	9.00	9.00	10.00

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16.9c.; Philadelphia, 15.9c.; Boston, 18.9c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8c.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 32.9c.; Denver, 68.6c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes. The foregoing rates to the Pacific coast are by rail. The rate via New York and the Panama Canal has no stability, being dependent on vessel charges.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c. base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras	Cents per lb.
Gauges under ¼ in. to and including 3-16 in.	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including straight taper plates), 3 ft. and over	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths under 3 ft. to 2 ft., inclusive.	.25
Cutting to lengths under 2 ft. to 1 ft., inclusive.	.50
Cutting to lengths under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Wire Products.—Prices to jobbers. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots, annealed, $1.35; galvanized, $1.90. Galvanized barb wire and staples, $2.10; painted, $1.60. Wire nails, $1.55. Galvanized nails, 1 in. and longer, $1.20 advance over base price; shorter than 1 in., $1.70 advance over base price. Woven wire fencing, 72 per cent. off list for carloads; 71 off for 1000-rod lots; 70 off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized	2.00	2.05	2.10	2.15	2.25	2.35	2.75	2.85

Wire Rods.—Bessemer, open-hearth and chain rods, $25.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.20c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H-beams over 18 in.	.10
Angles over 6 in., on one or both legs.	.10
Angles, 3 in. on one or both legs less than ¼ in. thick as per steel bar card, Sept. 1, 1909.	.70
Tees, structural sizes (except elevator, handrail, car truck and conductor rail)	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909	.20 to .80
Deck beams and bulb angles	.30
Handrail tees	.75
Cutting to lengths under 3 ft. to 2 ft. inclusive	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive	.50
Cutting to lengths, under 1 ft.	1.55

No charge for cutting to lengths 3 ft. and over.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card in effect from May 1, 1915, all full weight:

Butt Weld

Steel: Inches	Black	Galv.	Iron: Inches	Black	Galv.
⅛, ¼ and ⅜	72	51½	⅛ and ¼	64	42
½	76	64½	⅜	64	42
¾ to 3	79	68½	½	68	52
			¾ to 2½	71	57

Lap Weld

2	76	65½	1¼	55	41
2½ to 6	78	67½	1½	66	52
7 to 12	76	65½	2	67	54
13 and 14	62½	65½	2½ to 4	69	57
15	60	65½	4½ to 6	69	57
			7 to 12	67	57

Reamed and Drifted

1 to 3, butt	77	66½	1 to 1½, butt	69	55
2, lap	74	63½	2, butt	69	55
2½ to 6, lap	76	65½	1¼, lap	53	39
			1½, lap	64	50
			2, lap	65	52
			2½ to 4, lap	67	55

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	67	54½	⅜	61	48
½	72	63½	½	66	56
¾ to 1½	76	67½	¾ to 1½	70	58
2 to 3	77	68½	2 and 2½	71	59

Lap Weld, extra strong, plain ends

2	73	62½	1½	65	53
2½ to 4	75	64½	2	67	54
4½ to 6	74	63½	2½ to 4	69	57
7 to 8	68	57½	4½ to 6	68	56
9 to 12	63	52½	7 to 8	61	51
			9 to 12	56	46

Butt Weld, double extra strong, plain ends

½	62	53½	½	56	45
¾ to 1½	65	56½	¾ to 1½	59	48
2 to 2½	67	58½	2 and 2½	61	50

Lap Weld, double extra strong, plain ends

2	63	54½	2	57	45
2½ to 4	65	56½	2½ to 4	59	50
4½ to 6	64	55½	4½ to 6	58	49
7 to 8	58	47½	7 to 8	51	40

To the large jobbing trade an additional 5 per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts on less than carloads, f.o.b. Pittsburgh, freight to destination added, in effect from May 1, 1915, are as follows:

Lap Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.	65	1¾ and 2 in.	52
2¼ in.	62	2¼ in.	49
2½ and 2¾ in.	68	2½ and 2¾ in.	56
3 and 3¼ in.	73	3 and 3¼ in.	60
3½ and 4½ in.	74	3½ and 4½ in.	62
5 and 6 in.	67	5 and 6 in.	56
7 to 13 in.	64		

Locomotive and steamship special charcoal grades bring higher prices.

1¾ in., over 18 ft., 10 per cent. net extra.

2 in. and larger, over 22 ft., 10 per cent. net extra.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots

from store, are as follows, f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.25 to 1.30
Nos. 9 to 10	1.30 to 1.35
Nos. 11 and 12	1.35 to 1.40
Nos. 13 and 14	1.45 to 1.50
Nos. 15 and 16	1.55 to 1.60

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.45 to 1.50
No. 12	1.45 to 1.50
Nos. 13 and 14	1.50 to 1.55
Nos. 15 and 16	1.55 to 1.60
Nos. 17 to 21	1.60 to 1.65
Nos. 22 and 24	1.65 to 1.70
Nos. 25 and 26	1.70 to 1.75
No. 27	1.75 to 1.80
No. 28	1.80 to 1.85
No. 29	1.85 to 1.90
No. 30	1.95 to 2.00

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	2.60
No. 12	2.70
Nos. 13 and 14	2.70
Nos. 15 and 16	2.80
Nos. 17 to 21	2.95
Nos. 22 and 24	3.10
Nos. 25 and 26	3.30
No. 27	3.45
No. 28	3.60
No. 29	3.70
No. 30	3.85

Pittsburgh

PITTSBURGH, PA., May 18, 1915.

The placing of orders by the Pennsylvania Railroad for over 14,000 cars and the probability that it will this week contract for about 140,000 tons of steel rails are the two most encouraging features. These cars will give the mills about 175,000 tons of plates and shapes, as some of them, which are of new design, will take close to 15 tons of plates and shapes each. It is quite certain that the Rock Island will also place this week 5000 cars. As yet the grave situation existing between this country and Germany has not adversely affected local steel conditions. It is possible that some large jobs that were being figured on may be held up until the situation has cleared, but the leading steel companies state that so far they have not received any cancellations. Prices have not shown any weakness; in fact, plates and shapes are reported a little stronger. An advance of $4 per ton has been made on galvanized sheets by the leading interest, and 3.60c., Pittsburgh, on No. 28 for prompt shipment is minimum. There is still a heavy foreign demand for wire rods and plain and barb wire. Rods for export are bringing higher prices than domestic. It is reported that Russia will place an order this week for 10,000 cars, and while this comes from good sources it is not verified. The Steel Corporation is now operating its steel plants close to 80 per cent. of capacity.

Pig Iron.—A sale of 200 tons of Bessemer iron has been made for prompt shipment at $13.60, Valley furnace. A leading local seller is quoting $14 on Bessemer and $12.65 for basic, at Valley furnace. There is some inquiry out for foundry iron for last half and relatively low prices have been quoted. A sale is reported of 3000 to 4000 tons of gray forge for third quarter delivery at about $12.50, Valley furnace. We quote: Bessemer iron, $13.60; malleable Bessemer, $12.75; No. 2 foundry, $12.75 to $13; basic, $12.50 to $12.65, and gray forge, $12.50, all at Valley furnace, with a freight rate of 95c. a ton for delivery in the Cleveland and Pittsburgh districts.

Billets and Sheet Bars.—There is a fair inquiry for forging billets, and sales of 400 to 500 tons have been made at $26 at mill. The demand for Bessemer and open-hearth billets continues active, several large consumers desiring to cover their needs over the next three or four months, expecting a higher market. The steel mills in the Youngstown district are running close to capacity, and three or four of the Carnegie Steel company's plants are operating to full capacity. We quote Bessemer and open-hearth billets at $19, and Bessemer and open-hearth sheet bars, $19.50 to $20, f.o.b. maker's mills, Youngstown; Bessemer and open-hearth billets, $20, and Bessemer and open-hearth sheet bars, $21, f.o.b. Pittsburgh. Forging billets are quoted at $26 for sizes up to but not including 10 x 10 in., and for carbons up to 0.25, the regular extras being charged for larger sizes and higher carbons. Forging billets running above 0.25 to 0.60 carbon take $1 per ton extra. Axle billets are quoted at $21 to $22.

Ferroalloys.—It is reported that English makers have withdrawn the price of $88, seaboard, and are declining to quote. This does not affect the local market to any extent, as consumers are covered at lower prices and report deliveries fairly satisfactory. There is very little new inquiry. For prompt shipment from stock, carload lots are quoted at about $95, seaboard. We quote 50 per cent. ferrosilicon in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72; and over 600 tons, $71, delivered in the Pittsburgh district. We quote 10 per cent. ferrosilicon at $16.50; 11 per cent., $17.50; 12 per cent., $18.50, all f.o.b. cars at furnace, Ashland, Ky., Jackson or New Straitsville, Ohio, each of these points having a rate to Pittsburgh of $2 per gross ton. We quote 20 per cent. spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads, 10c. in 2000-lb. lots and over, and 12½c. in smaller lots.

Structural Material.—The possibility of complications between this country and Germany is said to have temporarily held up several large jobs. Bids have been asked on a new county bridge crossing the Ohio River at McKees Rocks, about 11,000 tons. The Pennsylvania Railroad has given 500 tons of bridge work to the McClintic-Marshall Company and the same amount to the Fort Pitt Bridge Works, and the latter has also taken 1350 tons of bridge work for the Chicago, Burlington & Quincy. The American Bridge Company has taken 1250 tons for a public library at Detroit and is low bidder on two dump scows for the Government at Louisville, about 200 tons. Prices on shapes are only fairly strong, and on any large new work would probably be shaded. We quote beams and channels up to 15 in. at 1.20c. for May and June, and 1.25c. for third quarter.

Steel Rails.—The Pennsylvania Railroad is expected to distribute this week its order for 138,000 tons of rails. No large orders for standard sections have been placed with the local mills the past week. The new demand for light rails is active from the traction companies, but from the coal-mining and lumber interests is only fair. The Carnegie Steel Company received new orders and specifications in the past week for about 2500 tons. We quote standard section rails made of Bessemer stock at 1.25c., and of open-hearth, 1.34c., f.o.b. Pittsburgh. We quite light rails as follows, in carload lots: 8 and 10 lb. section, 1.275c.; 12 and 14 lb., 1.225c.; 16 and 20 lb., 1.175c.; 25, 30, 35, 40 and 45 lb. sections, 1.125c. The prices of light rails are materially shaded on large lots.

Plates.—The Pennsylvania Railroad has placed orders for a total of 14,043 cars of various types, 6400 for the Lines West and 7643 for the Lines East. For the Lines West the Haskell & Barker Car Company took 2500 box cars; Pressed Steel Car Company, 2000 steel gondolas; American Car & Foundry Company, 100 refrigerator cars; Standard Steel Car Company, 800 steel gondolas, and the Ralston Steel Car Company 1000 steel gondolas. For the Lines East, the Pressed Steel Car Company got 500 steel gondolas; American Car & Foundry Company 224 refrigerator and 2719 steel gondola cars; Standard Steel Car Company, 200 steel gondolas, and Cambria Steel Company 3000 steel gondolas. The Lines East also placed 1000 wooden box cars for automobile service. The Pennsylvania Lines West has also bought 25 heavy freight service locomotives from the Lima Locomotive Corporation and 25 from the Baldwin Locomotive Works. The Lines West will also buy this week 43 passenger cars. It is estimated that about 175,000 tons of plates and shapes will be needed for these car orders, and in addition there will be the wheels. The placing of these heavy car orders is expected to have a good effect on the plate market. It is also stated that the Chicago, Rock Island & Pacific will place orders this week for about 5000 box cars, bids on which went in some time ago. The general demand for plates is only fairly active and prices are none too strong. The large mills are still quoting 1.20c. for May and June delivery, but this is shaded on desirable business. We quote ¼-in. and heavier plates at 1.15c. to 1.20c., f.o.b. Pittsburgh.

Sheets.—Owing to the steadily rising price of spelter, the American Sheet & Tin Plate Company on Monday, May 17, advanced its price on galvanized sheets $4 per ton, to 3.60c. for No. 28. This price is quoted to regular customers only and for prompt shipment. Other leading mills have advanced their prices and some small sales have been made at 3.70c. The new demand for black and galvanized sheets is not active, the market having been disturbed greatly by the high prices now quoted for galvanized. The American Sheet & Tin Plate Company is operating this week to 74 per cent. of hot sheet mill capacity. It reports that specifications last week for hot sheet and tin mill products were the heaviest it has had in any one week for more than two years. This company has taken 2500 tons of No. 12 black sheets for the 2000 or more cars that the Pennsylvania Railroad will build at its shops at Altoona, and has also taken the sheets for the 2500 box cars that the Haskell & Barker Car Company will build for the Pennsylvania Lines West. The sheet mills of the Youngstown Sheet & Tube Company, Brier Hill Steel Company and Youngstown Iron & Steel Company are all operating this week to 100 per cent. of capacity. We quote No. 28 Bessemer black sheets at 1.80c. to 1.85c.; No. 28 galvanized at 3.60c.; Nos. 9 and 10 blue annealed sheets, 1.30c. to 1.35c.; No. 30 black plate, tin-mill sizes, H. R. & A., 1.95c.; No. 28, 1.90c.; Nos. 27, 26 and 25, 1.85c.; Nos. 22 to 24, 1.80c.; Nos. 17 to 21, 1.75c.; Nos. 15 and 16, 1.70c. The above prices are for carload lots, f.o.b. at maker's mill, jobbers charging the usual advances for small lots from store.

Tin Plate.—Several of the larger makers state that specifications are still coming in actively, and they are operating close to 100 per cent. of capacity, but others say their specifications have fallen off. The American Sheet & Tin Plate Company continues to operate to about 95 per cent. of capacity. The new demand for tin plate is only for small lots, on which from $3.15 to $3.25 per base box is being quoted. If any desirable business came out a lower price would be named. It is reported that the Standard Oil Company will close shortly on a very large order, said to amount to 300,000 boxes or more.

Wire Rods.—Some new foreign inquiry has developed, with good prospects of the business being placed. The domestic demand is quiet and specifications against contracts are only fair, but the rod mills are all busy and a good part of their output is going into wire products for export. One local maker is not actively seeking new orders, being filled up for some time ahead. We quote Bessemer, open-hearth and chain rods at $25 to $26, f.o.b. Pittsburgh. Small sales have been made at the higher price.

Carwheels.—It is probable that some large orders for cast-iron and forged steel carwheels will shortly be placed. We quote standard 33-in. freight carwheels 6¼ in. rough bore at $16, and standard 36-in. passenger, the same bore, at $22.50 per wheel, f.o.b. Pittsburgh.

Shafting.—Prices are getting steadily firmer and the 70 per cent. discount has almost disappeared. Makers report specifications from the machine-tool builders very heavy, taking the larger part of the present output, which is at the rate of 70 to 75 per cent. of capacity. The automobile builders are specifying at a fair rate, but very little business is coming from the implement trade. We quote cold-rolled shafting at 68 per cent. off in carload and larger lots for forward delivery, and 63 per cent. off in small lots, f.o.b. Pittsburgh. For desirable specifications and prompt delivery, makers are quoting 68 to 70 per cent. off.

Railroad Spikes.—As yet nothing definite has come of the large inquiry for spikes from Russia, noted last week, on which local makers have bid. Specifications against contracts are coming in better, and shipments are heavier than for some time. There is a good deal of complaint over the low prices ruling for spikes when it is considered that the raw material has gone up considerably. We quote standard railroad spikes, $1.35 to $1.40; small railroad spikes, $1.45 to $1.50 in carload and larger lots, f.o.b. Pittsburgh.

Hoops and Bands.—Makers say that the 1.20c. price on steel bands for this month and June is firm, and that some fair sized orders are being placed. Some contracts for third quarter at 1.25c. have recently been given out. The new demand for hoops is quiet, but specifications against contracts are coming in at a moderate rate. We quote steel bands at 1.20c. on new orders for May and June delivery, 1.25c. for third quarter, with extras as per the steel bar card, and steel hoops at 1.25c., f.o.b. at mill.

Skelp.—Mills report the new demand quiet, but prices are firm, some makers asking 50c. to $1 per ton advance. We quote grooved steel skelp, 1.15c.; sheared steel skelp, 1.20c.; grooved iron skelp, 1.50c. to 1.55c.; sheared iron skelp, 1.60c. to 1.65c., delivered to consumers' mills in the Pittsburgh district.

Wire Products.—A good deal of business for export has recently been closed. Two local makers of barb wire are said to be shipping 30 to 40 per cent. of their output abroad. The domestic demand for wire nails is quiet, as the heavy buying period is over and specifications against contracts are moderate. Prices on galvanized products continue very strong. Local mills making wire and wire nails are operating to about 75 per cent. of capacity, and one or two close to 100 per cent. To jobbers, on new orders, the mills quote wire nails, $1.55; galvanized nails, 1 in. and shorter, taking an advance of $1.70 over this price, or $3.25, and galvanized nails, 1 in. and longer, an advance of $1.20, or $2.75; plain annealed wire, $1.35; galvanized barb wire and fence staples, $2.10 to $2.20; painted barb wire, $1.60, all f.o.b. Pittsburgh, freight added to point of delivery, terms 30 days net, less 2 per cent. for cash in 10 days. We quote woven wire fencing at 72 per cent. off in carload lots, 71 per cent. off on 1000-rod lots and 70 per cent. on small lots, f.o.b. Pittsburgh.

Iron and Steel Bars.—None of the implement makers has yet closed for steel bars for last half delivery, the price of 1.20c. being evidently the stumbling block. The mills are firm in their position, and are not inclined to sell for last half, even to the largest consumers, at less than 1.20c. Their position is strengthened by the fact that the demand for steel bars for some time has been very active, specifications have been good and capacity is pretty well employed. The price of 1.20c. for steel bars for May and June is reported firm, being shaded only in one or two localities and to a very slight extent. It is stated that some fair sized contracts have been placed for third quarter at 1.25c., but the value of these contracts will be known only when the third quarter period arrives. Mills rolling iron bars report a better demand and operations are slightly increased. We quote steel bars on new orders at 1.20c. for second quarter and 1.25c. for third quarter. We quote common iron bars, made from part scrap, at 1.20c. to 1.25c., and test iron bars at 1.30c., f.o.b. Pittsburgh.

Cold-Rolled Strip Steel.—An inquiry in the market from the Canadian Government is being figured on by practically all the makers, for upward of 6000 tons of cold-rolled strip steel, and it is understood the material is to be shipped to the Allies. Makers report domestic demand better than for some time and specifications more active. We quote hard-rolled steel, 1⅛ in. and wider, under 0.20 carbon, sheared or natural mill edges, per 100 lb., $2.75, delivered. Extras, which are standard among all the mills, are as follows:

Thickness, in.	Extras for thickness	Extras for soft or intermediate tempers	Extras for straightening and cutting to lengths not less than 24 in.
0.100 and heavier	Base	$0.25	$0.10
0.099 to 0.050	$0.05	0.25	0.15
0.049 to 0.035	0.20	0.25	0.15
0.034 to 0.031	0.35	0.40	0.25
0.030 to 0.025	0.45	0.40	0.40
0.024 to 0.020	0.55	0.40	0.50
0.019 to 0.017	0.85	0.50	1.10
0.016 to 0.015	1.25	0.50	1.10
0.014 to 0.013	1.95	0.50	1.25
0.012	2.30	0.50	coils only
0.011	2.65	0.50	coils only
0.010	3.00	0.50	coils only

Merchant Steel.—Mills report the new demand quite active and shipments heavier than at any time this year. Jobbers and consumers are buying more freely, believing that prices may be higher, due to the increased cost of raw material. On small lots for

prompt shipment we quote iron finished tire, ½ x 1½ in. and larger, 1.30c., base; under ½ x 1½ in., 1.45c.; planished tire, 1.50c.; channel tire, ¾ to ⅞ and 1 in., 1.80c. to 1.90c.; 1⅛ in. and larger, 1.90c.; toe calk, 1.90c. to 2c., base; flat sleigh shoe, 1.65c.; concave and convex, 1.70c.; cutter shoe, tapered or bent, 2.20c. to 2.30c.; spring steel, 1.90c. to 2c.; machinery steel, smooth finish, 1.70c.

Rivets.—The demand for both structural and boiler rivets is heavier than for some time and prices are firmer, but makers claim they are not as high as they should be when the 1.20c. price for steel bars is considered. We quote structural rivets at $1.40 to $1.45, and conehead boiler rivets at $1.50 to $1.55 per 100 lb., in carload lots, f.o.b. Pittsburgh.

Nuts and Bolts.—Due to increased operations in plants of consumers and also to the higher prices for raw material, the new demand is heavier. The market is firm. Discounts to the large trade are as follows:

U. S. S. Cold Punched Blank and Tapped, Chamfered, Trimmed and Reamed

½ in. and smaller, hex.....8.1c. per lb. off
⅝ in. and larger hex.....7.3c. per lb. off
Square, all sizes .....5.8c. per lb. off

Semi-Finished Tapped

½ in. and smaller hex.....85-10-10-10 off
⅝ in. and larger hex.....85-10-10 off

Black Bulk Rivets

7/16 x 6½, smaller and shorter.....80-10-5 off

Package Rivets 1000 Pcs.

Black, metallic tinned and tin plated....75-10-10 off

Wrought Pipe.—The National Tube Company has taken a contract for 57 miles of 16-in. line pipe for shipment to Texas. The new demand for wrought iron and steel pipe this month has been fairly good, but jobbers bought heavily in March and April and have accumulated quite large stocks. The new discounts on iron and steel pipe, effective from May 1, will be tested out this month, and it is stated that so far they are being well maintained. These discounts are printed on a previous page.

Boiler Tubes.—It is expected that the tubes for locomotives ordered by the Pennsylvania Railroad will be placed in a short time, and part of the amount required will come to Pittsburgh makers. The new demand for both locomotive and merchant tubes is slightly better, and it is stated discounts are fairly well held.

Old Material.—Prices on scrap are reported firmer. There has been a heavy demand for low-phosphorus melting stock. One leading consumer is reported to have taken 10,000 tons or more at about $15, delivered, representing an advance of fully $1 per ton since last week. Dealers report more inquiry from consumers, and it is believed that the scrap market is in such position that prices on leading grades, such as heavy steel melting scrap, borings, turnings and bundled sheet, may show a marked advance at any time. We note a sale of 300 tons of borings at about $8.35 and 500 tons of turnings at $8, delivered. For delivery in Pittsburgh and nearby districts that take Pittsburgh freights, dealers quote about as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery	$11.75
Compressed side and end sheet scrap	$10.25 to 10.50
No. 1 foundry cast	12.00 to 12.25
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	9.25 to 9.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	11.75 to 12.00
No. 1 railroad malleable stock	10.50 to 10.75
Railroad grate bars	8.50 to 8.75
Low phosphorus melting stock	14.75 to 15.00
Iron car axles	18.75 to 19.25
Steel car axles	13.25 to 13.75
Locomotive axles, steel	19.75 to 20.25
No. 1 busheling scrap	10.50 to 10.75
No. 2 busheling scrap	7.50 to 7.75
Machine shop turnings	7.75 to 8.00
Old carwheels	11.75 to 12.00
Cast-iron borings	8.25 to 8.50
*Sheet bar crop ends	12.00 to 12.25
Old iron rails	12.75 to 13.00
No. 1 railroad wrought scrap	10.75 to 11.00
Heavy steel axle turnings	8.50 to 8.75
Heavy breakable cast scrap	10.75 to 11.00

*Shipping point.

Coke.—An Eastern inquiry is in the market for about 12,000 tons of coke per month for last half. The new demand for foundry coke is quiet, but prices are fairly strong. There has been a heavy increase in the production of coke, the Connellsville Courier reporting the output for the week ended May 8 as 299,166 net tons, an increase over the previous week of 6275 tons. This is the heaviest output in any one week for some months. We quote best grades of furnace coke for delivery over the remainder of the year at $1.65 to $1.75, and for spot shipment $1.50 per net ton at oven. We quote standard makes of 72-hr. foundry coke for prompt shipment at $1.90 to $2.25, and on contracts for remainder of the year, from $2.15 up to $2.50 per net ton at oven.

Chicago

CHICAGO, ILL., May 18, 1915.

Sales of pig iron in the month of April exceeded those in March in this market by fully 50,000 tons. While there are not now under consideration tonnages of as great individual importance, figures are being taken upon a very interesting aggregate of business, and local furnaces are in a much better situation both as to stocks and operations. Mill bookings of finished materials have been commonplace except for heavier specifications in steel bars. This buying has been for general purposes and included a round tonnage for jobbers' stocks. The structural situation is less satisfactory from the mill standpoint, steel for building purposes being in little demand, and contracts for car and bridge steel very slow in closing. Except for the order for 1700 cars taken by the Haskell & Barker Car Mfg. Company for a Texas road, the new car programme shows no additional inquiry. The Missouri, Kansas & Texas has placed 2500 tons of bridge steel and the Louisville & Nashville requirements are stated at 10,000 tons. Inquiry for track materials includes only one of importance, 15,000 tons for the Chesapeake & Ohio. The Missouri, Kansas & Texas has placed a small order. The demand for track fastenings is active, including 5000 tons of tie plates for the Pennsylvania Railroad. In general, this market, though developing very slowly, presents a more responsive buying attitude and a wider range of activity.

Pig Iron.—Sales in this district by merchant furnaces were larger in April than in March by over 50,000 tons, according to reliable reports, and the activities of the steel company furnace interests brought this increase up to even higher figures. Local stocks have been appreciably reduced and shipments are improved. The buying by the heavier melters, to which this betterment of the situation is largely attributable, has been succeeded by a period less productive of tonnage but still characterized by a broad range of inquiry and buying. It cannot be indicated with accuracy to what extent international issues have hindered market progress, but certain important negotiations have been rather abruptly halted. Current trading is more largely concerned with Northern than Southern iron and includes a number of purchases of charcoal iron, one lot of 2000 tons being noted. Although furnace operations are now much more fully assured, producers still find business very attractive on the basis of existing quotations. For Southern iron of regular analysis the prevailing price is $9.75, Birmingham, while iron of analysis somewhat low in silicon or high in sulphur but closely approaching No. 2 foundry grading may be had on the basis of $9.50. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace, and do not include a switching charge averaging 50c. a ton:

Lake Superior charcoal, Nos. 2 to 5	$15.75
Lake Superior charcoal, No. 1	16.25
Lake Superior charcoal, No. 6 and Scotch	16.75
Northern coke foundry, No. 1	$13.50 to 13.75
Northern coke foundry, No. 2	13.00 to 13.50
Northern coke foundry, No. 3	12.50 to 13.00
Southern coke, No. 1 f'dry and 1 soft	14.00 to 14.25
Southern coke, No. 2 f'dry and 2 soft	13.50 to 14.00
Malleable Bessemer	13.00 to 13.25
Standard Bessemer	16.50
Basic	12.50 to 13.00
Low phosphorus	20.00 to 20.50
Jackson Co. and Ky. silvery, 8 per cent	16.90
Jackson Co. and Ky. silv'y, 10 per cent	17.90

Rails and Track Supplies.—Recent rail orders include no very large purchases, that of the Missouri, Kansas & Texas for 1200 tons, to be rolled at Chicago, being the only one to exceed 500 tons. The Chesapeake & Ohio has been figuring on 15,000 tons, a part of which may be rolled here. Specifications for track fastenings continue heavy. The Pennsylvania Railroad has sent out its inquiry covering the track fastenings corresponding to its pending rail inquiry, and, of the business likely to be placed at Chicago, 5000 tons of tie plates are noted. The Illinois Central, it is understood, will shortly duplicate its recent purchase of about 2000 tons of angle bars. We quote standard railroad spikes at 1.45c. to 1.50c., base; track bolts with square nuts, 1.90c., base, all in carload lots, Chicago; tie plates, $23.25 to $24.25, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, 1.25c., base; open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.07c.; 16 to 20 lb., 1.12c.; 12 lb., 1.17c.; 8 lb., 1.22c.; angle bars, 1.50c., Chicago.

Structural Material.—Of the steel for the 2000 Northwestern cars but 1000 tons is known to have been placed in this market, although it is possible that a larger proportion will be rolled here. No action has been taken as yet on the Rock Island inquiry, and the only new order of importance is that for 1700 cars for a Southwestern railroad placed with a builder at Michigan City. Local mills are hopeful of securing a part of the Louisville & Nashville requirements of bridge steel, estimated to be from 10,000 to 12,000 tons. The Wisconsin Bridge Company will fabricate close to 2500 tons for the Missouri, Kansas & Texas, and for this some of the plain material has already been placed with a Chicago mill. Other contracts taken by the fabricators last week include 582 tons for a school at Chicago, placed with A. Bolter's Sons; 404 tons for the Coliseum at Seattle, awarded to the Northwest Steel Company. The American Bridge Company took two small orders totaling 325 tons, and the Gage Structural Steel Company and Joliet Bridge & Iron Company also secured small orders. In the matter of prices, the buyers' attitude is not without its influence on the mills, and we quote for Chicago delivery of plain material from mill 1.35c. to 1.389c.

Structural sales out of store continue abnormally meager as compared with activity in kindred lines, a condition attributed almost entirely to the halt in local building operations. We quote for Chicago delivery of structural shapes out of stock 1.75c.

Plates.—The slight improvement that the past several days has brought in plate specifications has been far from adequate to modify the prevailing weakness, and we continue to quote for Chicago delivery of plates from mill 1.289c. to 1.339c.

Store trade in plates is characterized by a very light demand and conditions which closely parallel the mill situation. We quote for Chicago delivery of plates out of stock 1.75c.

Sheets.—The selling of galvanized sheets on a very restricted basis is still the rule in this market. The spelter situation has in no way improved, but, intermittently, a freer selling of galvanized metal follows the securing of spelter deliveries by the mills. Quotations as low as 3.40c., Pittsburgh, are still reported, but for the most part at least 3.60c. is being asked. The demand for black sheets is of insufficient consequence to relieve the situation. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.489c.; No. 28 black, 1.939c.; No. 28 galvanized, 3.589c. to 3.789c.

Galvanized sheets continue to be a leader in local warehouse selling. With their stocks ample to meet a sustained demand upon them, local jobbers are taking profitable advantage of the narrow spread between mill and store prices and are handling orders of unusual size. We quote for Chicago delivery from jobbers' stocks as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.95c.; No. 28 black, 2.55c.; No. 28 galvanized, 4c.

Bars.—Announcement has been made by a local bar-iron mill of an advance in its price to 1.20c., Chicago. As yet there has been no general upward movement to this basis, and 1.15c. is the prevailing market level. Steel-bar specifications have been running heavier, and in connection with this product the local steel market presents its firmest aspects. Demand for reinforcing bars is normally active and includes a round tonnage for the work of the Great Lakes Dredge & Dock Company at the Soo. The Santa Fe Railroad has ordered 700 tons of reinforcing bars for an elevator. We quote for mill shipments as follows: Bar iron, 1.15c. to 1.20c.; soft steel bars, 1.389c.; hard steel bars, 1.20c.; shafting, in carloads, 65 to 68 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off, and in carloads, 62 per cent. off.

Rivets and Bolts.—Sales of machine and carriage bolts in the smaller sizes have been sufficiently heavy, recently, to bring the operations of a number of Western plants well up toward full capacity, but in some instances at the expense of prices. Larger bolts have not been equally in demand. Rivet sales are interesting chiefly in connection with the degree of irregularity involved in prices quoted. In quantity sales are very light. Quotations are as follows: Carriage bolts up to ⅝ x 6 in., rolled thread, 80-15; cut thread, 80-10; larger sizes, 75-17½; machine bolts up to ⅝ x 4 in., rolled thread, 80-20; cut thread, 80-15; larger sizes, 80-2½; coach screws, 85-2½; hot pressed nuts, square, $6.60 to $6.40 off per cwt.; hexagon, $7.60 to $7.30 off per cwt. Structural rivets, ¾ to 1¼ in., 1.35c. to 1.45c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

We quote out of store: Structural rivets, 2c.; boiler rivets, 2.10c.; machine bolts up to ¾ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to ¾ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square, $6, and hexagon, $6.70 off per cwt.

Wire Products.—For galvanized wire the differential of 60c. per 100 lb. over plain wire is now being generally asked. With the prospect of an enhancement of the spelter stringency rather than a lessening, the firmness of galvanized quotations seems assured, although wire is less affected than sheet metal products. The general movement of wire is slowing up slightly, less noticeable in building than farm materials. We quote to jobbers as follows: Plain wire, No. 9 and coarser, base, $1.589; wire nails, $1.739 to $1.789; painted barb wire, $1.789; galvanized barb wire, $2.289 to $2.389; polished staples, $1.789; galvanized staples, $2.289 to $2.389, all Chicago.

Old Material.—Such tendencies as the various grades of scrap may separately exhibit are conspicuous largely because of being projected against a background of very limited trading. Heavy steel scrap has acquired some strength, in part because of a local demand and in part through the influence of the stronger Eastern market. Rolling-mill grades as a class are inactive, though some sales of busheling are noted. Stove plate asking prices indicate a slight increase in the firmness with which it is held, but cast scrap is noticeably weak. Railroad offerings of old material are of little consequence. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Old iron rails	$11.75 to $12.25
Old steel rails, rerolling	10.25 to 10.75
Old steel rails, less than 3 ft.	10.00 to 10.50
Old carwheels	9.75 to 10.25
Heavy melting steel scrap	9.50 to 9.75
Frogs, switches and guards, cut apart	9.50 to 9.75
Shoveling steel	9.00 to 9.25
Steel axle turnings	7.00 to 7.25

Per Net Ton

Iron angles and splice bars	$11.50 to $12.00
Iron arch bars and transoms	11.75 to 12.25
Steel angle bars	8.50 to 8.75
Iron car axles	13.50 to 13.75
Steel car axles	10.50 to 11.00
No. 1 railroad wrought	9.00 to 9.25
No. 2 railroad wrought	8.25 to 8.75
Cut forge	8.25 to 8.75
Steel knuckles and couplers	8.00 to 8.50
Steel springs	8.75 to 9.25
Locomotive tires, smooth	8.50 to 9.00
Machine shop turnings	5.25 to 5.75
Cast borings	5.00 to 5.50
No. 1 busheling	7.50 to 7.75
No. 2 busheling	6.50 to 6.75
No. 1 boilers, cut to sheets and rings	5.50 to 6.00
Boiler punchings	8.25 to 8.50
No. 1 cast scrap	9.00 to 9.25
Stove plate and light cast scrap	8.00 to 8.25
Grate bars	7.50 to 7.75
Railroad malleable	9.25 to 9.50
Agricultural malleable	7.25 to 7.50
Pipes and flues	6.50 to 6.75

Cast-Iron Pipe.—The amount of new business in sight is limited, and the only recent contracts formally closed were 10,000 tons at Sacramento, placed with the

leading interest, and 600 tons for Highland Park, Mich., awarded to the Detroit shop of the American Car & Foundry Company. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $25.50; 6 to 12 in., $23.50; 16 in., and up, $23, with $1 extra for gas pipe.

Philadelphia

PHILADELPHIA, PA., May 18, 1915.

The general comment is that the market has undergone but little, if any, change. Where there has been a slight falling off in one direction it has been made up in another. The railroads are buying more freely, but in small lots and in a scattered way. The Pennsylvania Railroad rail order has not yet appeared. The demand for structural material in this district continues light, although there is a little betterment in the call for concrete reinforcing bars. The demand for plates continues to come out in a fairly satisfactory manner. The price of plates, shapes and bars is held more closely to the 1.20c., Pittsburgh, base, though it is admitted that plates can be had for less. In bars the call for shrapnel rounds is the commanding feature. The demand for sheets is maintained. Quotations on ferromanganese have been withdrawn by representatives of the English producers. The prospect for exports is bettered by reductions in ocean freights. To Mediterranean ports the asking price is now 48s. ($11.68) per ton and to British ports, 35s. ($8.52), against 60s. ($14.60) and 40s. ($9.73) respectively, prevailing a few days ago.

Iron Ore.—Arrivals at this port in the week ended May 15 were 15,100 tons from Cuba, 9705 tons from Sweden and 6250 tons from Chile. New business in foreign ore is dead. The market has been sounded on Wabana ore, but consumers were unwilling to pay even low prices.

Pig Iron.—The Norfolk & Western Railroad has issued an inquiry for last half requirements, specifying 4000 tons of miscellaneous grades, including foundry, Bessemer and charcoal irons. The week appears to have been irregular in point of sales, although in some directions the aggregate of small lots is fully up to the volume of preceding weeks. The deliveries of Virginia iron have been a shade better, but inquiry is lighter. Basic is stronger so far as quotations go, although there have been no sales to test prices. From $13.50 to $13.75 is asked, according to conditions and deliveries. By some sellers, business offered at $13.50 has been declined. Small lots of standard low phosphorus have been taken from day to day at unchanged prices and some has been sold in Canada as a substitute for English west coast hematite which can no longer be obtained. Quotations for standard brands for early delivery in buyers' yards in this district are as follows:

Eastern Penna. No. 2 X, foundry	$14.25 to $14.50
Eastern Penna. No. 2 plain	14.00 to 14.25
Virginia, No. 2 X, foundry	15.25 to 15.75
Virginia No. 2 plain	15.00 to 15.25
Gray forge	13.25 to 13.50
Basic	13.25 to 13.75
Standard low phosphorus	20.00 to 20.50

Ferroalloys.—Most representatives of English producers say that in the latter part of last week they received cables directing them to withdraw prices on 80 per cent. ferromanganese. Why this is done is not clear to the dealers themselves. One large dealer has advanced his price to $98 seaboard. In the week ended May 15 there arrived at this port 1630 tons. The quotations for 50 per cent. ferrosilicon remain at $71 to $73, Pittsburgh, according to quantity.

Bars.—Specifications for plain steel bars continue fairly good and there has been some making of contracts for second quarter at 1.25c., Pittsburgh. The demand for concrete reinforcing bars is improving. The interest of the trade is mostly centered in the large inquiry which is coming out for shrapnel rounds. The Bethlehem Steel Company is in the market for 10,000 tons, some of which is to be shipped to Milwaukee to be worked up under a sub-contract. The Baldwin Locomotive Works has also taken estimates and there have been other inquiries, some of which have resulted in purchases. Iron bars are unchanged at 1.17½c. to 1.20½c., Philadelphia.

Plates.—Quotations for prompt delivery are firm at 1.309c. to 1.359c., Philadelphia. The miscellaneous trade is holding up and more orders are promised by the placing of two or three oil tankers with local shipyards. Local makers are bidding on about 5800 tons of plates which will be required by the extension to the subway system in Brooklyn.

Rails.—Mill representatives continue to await anxiously rail orders from the Pennsylvania Railroad. The Norfolk & Western has placed 1000 tons with the Cambria Steel Company and 1000 tons with another company. The company mentioned has received orders amounting to 9000 tons from the Baltimore & Ohio in the past few days. The Charleston & Interurban Railway has bought about 2400 tons from the Carnegie and Cambria steel companies, the order for the accompanying accessories going to the Lackawanna Steel Company.

Structural Material.—Projects involving structural material are few in this territory. The Pennsylvania Railroad has issued inquiries for small bridges almost daily and the Baltimore & Ohio has some similar inquiries out also, but the entire tonnage involved is not great. There is talk of an addition to the Bulletin Building, this city. Bids will be taken shortly on about 500 tons to be required by the First National Bank Building, Scranton, Pa. Structural steel makers have felt the activity which has prevailed in the building of sugar plants in Cuba. There is a much more general tendency to adhere to the basis of 1.20c., Pittsburgh, or 1.359c., Philadelphia, for prompt business.

Sheets.—Continued betterment is shown in the demand for sheets, especially that which comes from automobile manufacturers. The market is steady at 1.459c. to 1.509c., Philadelphia, for No. 10 blue annealed.

Billets.—Some producers find the demand for billets quieter, while others report it fully sustained as compared with recent weeks. There have been further exports. The market is firm at $22.02, Philadelphia, for open-hearth rolling billets. An extra of $4 to $5 per ton is charged for forging steel.

Coke.—Furnace coke for early delivery can be had at $1.60 to $1.65, and contract at $1.70 to $1.75, per net ton, at oven. Prompt foundry is quoted at $2 to $2.35 and contract at $2.20 to $2.50. Contracts for foundry are light, but prices are a trifle stiffer. Freight from the principal producing districts are as follows: Connellsville, $2.05; Latrobe, $1.85, and Mountain, $1.65.

Old Material.—There is very little change to note in this market. Small lots of heavy melting steel have sold at $11.50. There have been a few sales of late of steel axles for export to England where they are used in place of billets in forging. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania and taking freight rates from 35c. to $1.35 per gross ton, are as follows:

No. 1 heavy melting steel	$11.50
Old steel rails, rerolling	11.50 to 12.00
Low phos. heavy melting steel scrap	14.50 to 14.75
Old steel axles	14.00 to 14.50
Old iron axles	17.50 to 18.00
Old iron rails	15.00 to 15.50
Old carwheels	11.50 to 12.00
No. 1 railroad wrought	13.00 to 13.25
Wrought-iron pipe	10.75 to 11.00
No. 1 forge fire	8.00 to 8.50
Bundled sheets	9.00 to 9.50
No. 2 busheling	7.75 to 8.25
Machine shop turnings	8.50 to 8.75
Cast borings	8.00 to 8.25
No. 1 cast	12.25 to 12.50
Grate bars, railroad	9.00 to 9.25
Stove plate	9.00 to 9.25
Railroad malleable	9.50 to 10.00

That the smoke crusade in Baltimore has been a failure and that the smoke abatement commission has done little or nothing, is the statement made by Mayor James H. Preston of that city. Several months ago the smoke inspector, dissatisfied with the progress of the commission, tendered his resignation, but it was not accepted. It is believed now that it will be accepted and that further efforts on the part of the city to abate the nuisance will be abandoned.

Buffalo

BUFFALO, N. Y., May 18, 1915.

Pig Iron.—Inquiry and sales of foundry grades have been light, but considerable inquiry is noted for malleable, from Eastern points, and quotations have been made at $12.75, furnace, although $13 is the price at which most producers are holding this grade. The only sales so far reported on these inquiries, however, are two or three small lots. Continued buying of charcoal irons and high silicon softeners and furnace ferrosilicon in small lots is the only special feature for the week. One lot of about 1000 tons of low grade is reported as sold at a figure a little under the minimum of the quotations shown below. Prices remain practically unchanged from last week, although one producing interest that has been selling some grades at a trifle less than what might be called the established market has now stiffened somewhat on its quotations. We quote as follows, f.o.b. furnace, Buffalo, for current quarter and last half delivery:

No. 1 foundry	$13.25 to $13.50
No. 2 X foundry	13.00 to 13.25
No. 2 plain	12.75 to 13.00
No. 3 foundry	12.50 to 12.75
Gray forge	12.50
Malleable	13.00 to 13.25
Basic	13.25 to 13.75
Charcoal, regular grades and analysis	15.75 to 17.25
Charcoal, special grades and analysis	19.00 to 20.00

Finished Iron and Steel.—Specifications in fair volume are reported for steel bars, small shapes and plates against second quarter contracts. Little new contracting is being done, however, largely on account of mills taking the attitude that they do not care to actively solicit contracts for extended delivery at this time, and the feeling on the part of buyers that the advance asked for third quarter is somewhat higher than present conditions justify. Some contracts are being closed at the advanced price, 1.25c., Pittsburgh, for third quarter. Bar iron has been advanced $1 per ton, effective May 17. Wire and wire products show fair specifications but light inquiry for new business, users appearing to be covered for requirements to July 1. Some improvement in deliveries is noted. Extras on wire and wire products, frequently discussed of late, are now actually in effect. Jobbers report business good in steel pipe and shafting. It is understood that 68 per cent. off, f.o.b. Pittsburgh, carload lots, is bottom for third quarter, with an inclination on the part of sellers to advance quotations to 67 per cent. off. Bids went in today for an additional foundry building at the Pierce plant of the American Radiator Company, this city, taking about 400 tons of structural steel. The contract for 200 tons of steel for the power house for the Diamond Match Company, Oswego, N. Y., went to the Lackawanna Bridge Company. R. T. Ford, Rochester, has placed an order for structural steel for a hotel in that city with the Phoenix Iron Company, Philadelphia, amounting to 425 tons.

Old Material.—The offerings of scrap by the New York Central, Michigan Central and Pennsylvania railroads the past week went at higher prices than have been realized on similar sales for some time. Dealers' prices, however, remain unchanged for the present, although there is a strong belief that prices will soon be higher. Cast scrap, for which the demand has been light for some weeks, is now looking up, and a number of large sales are pending. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$10.50 to $11.00
Low phosphorus steel	13.00 to 13.50
No. 1 railroad wrought scrap	10.00 to 10.50
No. 1 railroad and machinery cast	10.50 to 11.00
Old steel axles	12.00 to 12.50
Old iron axles	16.00 to 16.50
Old carwheels	10.75 to 11.25
Railroad malleable	9.50 to 10.00
Machine shop turnings	5.75 to 6.25
Heavy axle turnings	8.50 to 9.00
Clean cast borings	6.50 to 6.75
Old iron rails	11.00 to 11.50
Locomotive grate bars	9.00 to 9.50
Stove plate (net ton)	8.25 to 8.75
Wrought pipe	7.00 to 7.50
Bundled sheet scrap	7.25 to 7.75
No. 1 busheling scrap	8.50 to 9.00
No. 2 busheling scrap	6.50 to 7.00
Bundled tin scrap	9.00

Cleveland

CLEVELAND, OHIO, May 18, 1915.

Iron Ore.—There is not a great deal of activity in the market. A few small lot sales of standard ores are reported and a fair demand for low grade ores, but independent furnace interests are generally delaying placing of contracts. The activity in low grade ores is attributed to the fact that many of the mines producing these ores are not in operation and as the supply offered is not large, some of the furnace interests are purchasing low grade ore now, but will not place orders for standard ore until later. To give buyers the benefit of the 5c. reduction in railroad rates ordered on Mesaba ore by the Interstate Commerce Commission, leading sellers in making contracts will use the present base price and will deduct 5c. after premiums and penalties have been adjusted. By this method of computation the price on ore of high or low iron content will vary slightly from the price, were the 5c. reduction made directly from the base price. Of great interest to the Lake vessel trade is the recent ruling of the Interstate Commerce Commission that railroads operating package freighters on the Lakes must dispose of their vessels under the provision of the Panama Canal act, which forbids railroad ownership of competing water lines. There are 62 package freighters on the Lakes controlled by the railroads which must be disposed of by December 1. Some other form of operation of these will probably be devised. We quote base ore prices as follows, delivered to lower Lake ports: Old range Bessemer, $3.75; Mesaba Bessemer, $3.50; old range non-Bessemer, $3.00; Mesaba non-Bessemer, $2.85.

Pig Iron.—A Cleveland interest reports a number of sales aggregating 9000 tons of foundry and malleable iron, mostly the former, during the week, these orders coming from inquiries that had been pending a week or two. In the immediate territory the market is very dull and new inquiry from this and other districts is unusually light. Shipments are being made in good volume. Shipments of low-phosphorus iron have improved this month, but new inquiry is lacking. Southern iron is inactive, the higher prices that are being asked having apparently caused buyers to hold off. Foundry iron is quoted at $12.50 to $12.75, Valley furnace, for No. 2 and the same quotations are being made in Cleveland for outside shipments. Southern iron is held at $9.75 to $10, Birmingham, for No. 2 for the last half, but can be had at $9.50 for spot shipments. We quote, delivered Cleveland, as follows:

Bessemer	$14.55
Basic	$13.45 to 13.60
Northern No. 2 foundry	13.25 to 13.50
Southern No. 2 foundry	13.50 to 14.00
Gray forge	13.00
Jackson Co. silvery 8 per cent. silicon	16.37 to 16.62
Standard low phos. at furnace	19.75 to 20.00

Coke.—There is considerable activity in foundry coke contracts, many consumers having placed orders during the past few days for their requirements for twelve months from July 1. Prices for standard Connellsville foundry coke range from $2.15 to $2.50 per net ton at oven for spot shipment, and $2.25 to $2.50 for contracts. Furnace coke is held at $1.50 for prompt shipment, and $1.65 to $1.75 for last half contracts.

Bolts, Nuts and Rivets.—The demand for bolts and nuts is holding up well, but rivet specifications are light, although some good orders have come recently from Eastern shipbuilders. Some consumers are trying to secure last half contracts at current prices, but makers will not sell at these prices, owing to the advance in price on steel bars. We quote structural rivets at 1.45c., Pittsburgh, and boiler rivets at 1.55c. for carload lots, but in some cases these prices are being shaded $1 a ton. Bolt and nut discounts are as follows: Common carriage bolts, ⅜ x 6 in., smaller or shorter, rolled thread, 80 and 15 per cent., cut thread, 80 and 10 per cent.; larger or longer, 75 and 17½ per cent.; machine bolts with h.p. nuts, ⅜ x 4 in., smaller or shorter, rolled thread, 80 and 20 per cent.; cut thread, 80 and 15 per cent.; larger or longer, 80 and 2½ per cent.; coach and lag screws, 85 and 2½ per cent.; square h.p. nuts, blank or tapped, $6.40 off; hexagon h.p. nuts, blank or tapped, $7.30 off; c.p.c. and t.

square nuts, blank or tapped, $6.10 off; hexagon, ⅝ in. and larger, $7.60 off; 9/16 and smaller, $8.30 off; semi-finished hexagon nuts, ⅝ in. and larger, 85, 10, 10 and 5 per cent.; 9/16 and smaller, 85, 10, 10, 10 and 5 per cent.

Finished Iron and Steel.—Conditions in finished lines are generally satisfactory. There is a good demand for steel bars and some of the mills are now unable to make deliveries on large rounds within three or four weeks, this being attributed to orders for rounds recently placed for war material. Some large specifications for steel bars have come from local consumers, there apparently being a tendency to specify ahead more freely than has been done recently. There is a heavy demand from the automobile trade for forging steel, and both local rolling mills are now running almost entirely on forging steel bars. The market is firm at the 1.25c., Pittsburgh, price for the third quarter, no concessions being made from that price except to the implement trade. Plates are firmer, but the 1.15c. price for early delivery has not disappeared. The demand for structural material is not active. Most of the building that is being placed is for small tonnages, and the material for this is being supplied under the fabricators' regular contracts. Bids have been taken for about 400 tons for shop buildings for the American Ship Building Co. and for 300 tons for the market house in Cleveland. Weakness has developed in prices on black sheets which are being quoted as low as 1.70c. at mill and possibly lower. This is due to the fact that several Ohio mills that have used up their supply of spelter, having discontinued making galvanized sheets, and they are now more eager for orders for black sheets. Galvanized sheets are quoted at 3.40c. to 3.75c. for No. 28 and blue annealed at 1.30c. to 1.35c. for No. 10. Iron bars are being quoted at 1.20c. to 1.25c., Cleveland. Warehouse prices are 1.80c. for steel bars and 1.90c. for plates and structural material.

Old Material.—Steel scrap is firm and in fair demand, but iron scrap is a drug on the market. The Lake Shore Railroad sold its heavy melting steel scrap to Youngstown and Sharon mills last week at $11.75, and local prices on this grade are slightly firmer. Cleveland prices on borings and turnings are 25c. a ton higher, owing to the demand for those grades by Mahoning Valley mills, where borings are quoted at $8.75 to $9 and turnings at $8 to $8.10 per gross ton. Railroad wrought is weaker, some local tonnage going at $9.35. Old and new busheling are now being quoted at the same prices. We quote f.o.b. Cleveland as follows:

Per Gross Ton

Old steel rails, rerolling	$11.00 to $11.75
Old iron rails	12.00
Steel car axles	12.00 to 12.50
Heavy melting steel	10.25 to 10.75
Old carwheels	9.75 to 10.00
Relaying rails, 50 lb. and over	22.50
Agricultural malleable	8.00 to 8.50
Railroad malleable	10.00 to 10.25
Steel axle turnings	8.75 to 9.00
Light bundled sheet scrap	8.00 to 8.50

Per Net Ton

Iron car axles	$14.50 to $15.00
Cast borings	6.50 to 6.75
Iron and steel turnings and drillings	5.75 to 6.00
No. 1 busheling	8.50 to 8.75
No. 1 railroad wrought	9.25 to 9.50
No. 1 cast	9.75 to 10.25
Stove plate	7.75 to 8.00

Boston

BOSTON, MASS., May 18, 1915.

Old Material.—The market shows some improvement in inquiries and demand, but prices have not changed enough to alter accepted quotations. The activities of the machine shops have largely increased the output of borings and turnings, and this added supply has in some degree neutralized the natural advance in market values of these commodities. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. Mill prices are approximately 50c. per ton higher.

Heavy melting steel	$8.25 to $8.50
Low phosphorus steel	13.75 to 14.75
Old steel axles	12.75 to 13.25
Old iron axles	20.25 to 20.75
Mixed shafting	12.00 to 12.25
No. 1 steel wrought and soft steel	8.25 to 8.75
Skeleton (bundled)	5.50 to 5.75
Wrought-iron pipe	7.00 to 7.50
Cotton ties (bundled)	5.25 to 5.75
No. 2 light	3.25 to 3.75
Wrought turnings	5.00 to 5.50
Cast borings	5.00 to 5.25
Malleable	7.50 to 7.75
Stove plate	7.00 to 7.50
Grate bars	5.25 to 5.50
No. 1 machinery cast (price to consumer)	13.00 to 13.50
No. 2 machinery cast (price to consumer)	11.50 to 12.00

St. Louis

ST. LOUIS, MO., May 17, 1915.

Pig Iron.—Marked firmness is reported in prices, but transactions are all small. There is no present indication of a disposition to contract ahead.

Coke.—Contracts are being made for coke by a number of small foundries, aggregating a fair amount for the year, but not in themselves of much moment. These contracts are being renewed on about the same allotments per month as for the past year and for the most part at about 20c. per ton lower than a year ago. By-product coke is quotable at about $5.10 per net ton, delivered at St. Louis.

Finished Iron and Steel.—Individual transactions are small, but the aggregate is keeping up well with recent totals. Business is better with the outlying country territory than in the city proper. The Frisco receivers are reported to be figuring on a large tonnage of rails, which, however, is unlikely to come into the market before the close of the fiscal year, June 30. The estimates run as high as 40,000 tons, but this will undoubtedly be reduced materially when the buying is actually consummated. Bars are in probably the best request, both ordinary and reinforcing. Agricultural implement people are buying fairly well, but vehicle plant purchases are light. Movement out of warehouse continues quite good. For stock out of warehouse we quote as follows: Soft steel bars, 1.70c.; iron bars, 1.65c.; structural steel, 1.80c.; tank plate, 1.80c.; No. 10 blue annealed sheets, 2c.; No. 28 black sheets, cold rolled, one pass, 2.55c.; No. 28 galvanized sheets, black sheet gauge, 3.85c. to 3.95c.

Old Material.—The scrap market is in a sagging condition and prices are off. The steel mills and foundries generally are not buying, and in many cases an actual embargo exists, while rejections of shipments under contract are reported made with much more frequency than ever before on slight technicalities. Relaying rails are in good demand and prices are well held, constituting the only bright spot in the market. No lists have appeared since last report. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton

Old iron rails	$10.00 to $10.50
Old steel rails, re-rolling	9.50 to 10.00
Old steel rails, less than 3 ft.	10.25 to 10.75
Relaying rails, standard section, subject to inspection	22.00 to 23.00
Old carwheels	8.75 to 9.25
No. 1 railroad heavy melting steel scrap	8.75 to 9.25
Shoveling steel	7.75 to 8.25
Frogs, switches and guards cut apart	8.75 to 9.25
Bundled sheet scrap	5.50 to 6.00

Per Net Ton

Iron angle bars	$10.00 to $10.50
Steel angle bars	7.75 to 8.25
Iron car axles	13.50 to 14.00
Steel car axles	9.50 to 10.00
Wrought arch bars and transoms	10.75 to 11.25
No. 1 railroad wrought	7.50 to 8.00
No. 2 railroad wrought	7.50 to 8.00
Railroad springs	7.75 to 8.25
Steel couplers and knuckles	7.75 to 8.25
Locomotive tires 42 in. and over smooth inside	8.50 to 9.00
No. 1 dealers' forge	6.75 to 7.25
Mixed borings	4.50 to 5.00
No. 1 busheling	7.00 to 7.50
No. 1 boilers, cut to sheets and rings	5.75 to 6.25
No. 1 railroad cast scrap	7.75 to 8.25
Stove plate and light cast scrap	6.25 to 6.75
Railroad malleable	5.75 to 6.25
Agricultural malleable	5.25 to 5.75
Pipes and flues	5.50 to 6.00
Railroad sheet and tank scrap	5.75 to 6.25
Railroad grate bars	6.25 to 6.75
Machine shop turnings	4.75 to 5.25

Cincinnati

CINCINNATI, OHIO, May 19, 1915.—(*By Wire.*)

Pig Iron.—Both sales and inquiries have been very light the past week. The only transactions of note were 1500 tons of malleable taken by a central Ohio melter and 2000 tons of Lake Superior charcoal by a Michigan buyer, both for last half shipment. The quiet conditions now prevailing in foundry iron are attributed in a measure to the comparatively large purchases that were quietly made during the recent buying movement. More iron is understood to have then changed hands than even the iron merchants themselves realized. Southern producers continue their efforts to establish higher prices, but while $9.75 to $10, Birmingham, is quoted for last half shipment some Tennessee iron can yet be obtained at $9.50, Birmingham basis. Northern iron is steady at $12.50, Ironton, and this price has been inserted in contracts for shipment through the remainder of the year. It is also understood that the recent sales of malleable were made on this same basis. Inquiries are few and are only for small tonnages for nearby shipment. The melt of foundry iron in this territory is ahead of last year's record, but it is not yet up to the standard. Neither the stove foundries nor the agricultural implement manufacturers are consuming anything like their usual quantities. Based on freight rates of $2.90 from Birmingham and $1.26 from Ironton we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft	$12.90 to $13.40
Southern coke, No. 2 f'dry and 2 soft	12.40 to 12.90
Southern coke, No. 3 foundry	11.90 to 12.40
Southern No. 4 foundry	11.40 to 11.90
Southern gray forge	10.90 to 11.40
Ohio silvery, 8 per cent. silicon	16.01 to 16.26
Southern Ohio coke, No. 1	14.76 to 15.26
Southern Ohio coke, No. 2	13.76 to 14.26
Southern Ohio coke, No. 3	13.51 to 13.76
Southern Ohio malleable Bessemer	13.76 to 14.01
Basic, Northern	13.76 to 14.01
Lake Superior charcoal	16.20 to 17.20
Standard Southern carwheel	26.90 to 27.40

(*By Mail*)

Coke.—More foundries have contracted for a 12 months' supply, contracts being for usual quantities. The stove foundries are behind in their purchases, and a few of them have enough coke under previous contracts to run them well toward the end of the year. There are no furnace coke contracts in sight in this territory. Connelisville 48-hr. coke is quoted at $1.50 to $1.60 per net ton at oven for prompt shipment, and from $1.60 to $1.70 on contract. Connellsville 72-hr. coke ranges from $2.20 to $2.35, and future shipment prices $2.35 to $2.50. Wise County contract quotations are $2.40 to $2.50 per net ton at oven.

Finished Material.—Galvanized sheets continue to advance, and No. 28 sheets are quoted at 2.75-8/10c. Cincinnati, or Newport, Ky., for prompt shipment. The continued advance in spelter is the cause of the marking up of galvanized sheet quotations. No. 28 black sheets are quoted at 1.80c. to 1.85c., Pittsburgh. Some business in both galvanized and black sheets is reported, and specifications on contracts are satisfactory. It is probable that galvanized sheets have been ordered lately on a larger scale than is generally known, and while the question of prompt shipment has not yet come up it may be a factor to be considered in the near future with a number of makers. It is reported that an Eastern mill booked a good order for round steel bars in this territory last week, but confirmation is lacking at this time. Another order is known to be pending that will be closed soon.

Old Material.—Very little scrap of any kind is being bought or sold, but the increased consumption by the rolling mills in this territory will undoubtedly have some effect on the market at an early date. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at yards:

Per Gross Ton

Bundled sheet scrap	$6.25 to $6.75
Old iron rails	10.50 to 11.50
Relaying rails, 50 lb. and up	19.25 to 19.75
Rerolling steel rails	9.75 to 10.25
Melting steel rails	8.50 to 9.00
Heavy melting steel scrap	8.50 to 9.00

Per Net Ton

No. 1 railroad wrought	$8.50 to $9.00
Cast borings	4.50 to 5.00
Steel turnings	4.50 to 5.00
Railroad cast scrap	9.00 to 9.50
No. 1 machinery cast scrap	10.25 to 10.75
Burnt scrap	6.50 to 7.00
Old iron axles	13.50 to 14.00
Locomotive tires (smooth inside)	8.50 to 9.00
Pipes and flues	5.75 to 6.25
Malleable and steel scrap	7.00 to 7.50
Railroad tank and sheet scrap	5.00 to 5.50

San Francisco

SAN FRANCISCO, CAL., May 11, 1915.

Business continues rather spasmodic. Ordinary routine requirements, though gradually increasing, are still below normal, and purchases in general are restricted to what is absolutely needed. A few scattering inquiries for large quantities are appearing, but such business is slow to materialize. Jobbing prices are now steadily maintained in most lines.

Bars.—Some of the larger buyers are taking more interest, though purchasing in a very conservative way. A good many small inquiries for concrete buildings and bridges are also coming out, but the tonnage is not heavy, and local mills are operating on a limited scale. The general desire for orders tends to keep prices down, and soft steel bars are offered at about 1.70c. from local mill or warehouse, which, at the prevailing freight rate, would be equivalent to less than 1.10c., Pittsburgh.

Structural Material.—The only new contract reported is the Oakland wharf shed, about 250 tons, taken by Dyer Bros. Some new work is in prospect at Salt Lake City, Utah, where Los Angeles architects are drawing plans for a 24-story office building for the Deseret National Bank, and preliminary plans have been drawn for another building of 28 stories.

Rails.—No single orders of importance have appeared, but there has been a fair movement of light rails and prompt delivery is desired on numerous small inquiries still appearing. Buying for logging roads is below normal.

Plates.—A contract for a lighthouse tender of 1750 tons has been placed by the Government with the Craig Shipbuilding Company, Long Beach, Cal. A fair tonnage on old contracts is coming to various ship plants on San Francisco Bay, as well as to oil storage plants under construction.

Sheets.—The consuming demand for galvanized sheets shows some increase. Requirements for building and the manufacture of irrigation specialties are growing. The leading interest is still booking orders on the basis of 3.40c., Pittsburgh, while some other mills have lately quoted as high as 3.60c. Specifications on contracts placed at about 3.25c. are coming out freely.

Wrought Pipe.—Jobbing business is very dull. The recent advance was followed by a corresponding change in resale prices, but brought practically no response in the way of increased business. Oilfield business also is quiet, though it is reported that the Standard Oil Company plans to lay a 25-mile gas line of 8-in. pipe. Oregon City, Ore., has let a contract to the National Tube Company for 2500 tons, and Portland, Ore., is taking bids on 1600 ft. of 8-in. lap-weld pipe.

Cast-Iron Pipe.—The town of Imperial, Cal., has placed a contract for 185 tons, and small amounts have been ordered by Brawley and Santa Barbara, Cal. The city of Los Angeles has placed an order with J. W. Blair, San Francisco, for about 500 tons. Some small orders are also being placed by oil companies in connection with refinery work.

Pig Iron.—The general foundry situation is unchanged, though some melters have been fairly busy lately, and, with little pig iron coming in, the stock in importers' hands is gradually decreasing. Some scattering lots of domestic iron are being sold, usually by analysis and on private terms. Tata iron from India, which finds considerable favor with local melters, is offered to arrive at about $22 per gross ton, and Jarrow at about $21, though there is little of the latter available.

Coke.—No foreign coke has arrived for some time. Small consumers are depending on stocks held locally, and some large foundries still have fair supplies, but there is an increasing movement of domestic coke to foundries, steel plants and smelters. Some lines of domestic coke are purchased at about $12 per net ton, San Francisco, while as high as $14.50 to $15 per net ton is paid for coke from the Connellsville district. Imported foundry coke, ex yard, is quoted at $14 per net ton.

Old Material.—Cast-iron scrap is still held at about $14 to $16 per net ton, with a limited but fairly steady demand. Steel melting scrap is moving in a very small way, as the local steel plants are pretty well supplied, and their present requirements are hardly up to normal.

New York

NEW YORK, May 19, 1915.

Pig Iron.—A foundry in the Boston district is in the market for 2900 tons of iron for delivery in the six months beginning with September. This is the only large inquiry in the East and is one of the few in which deliveries are asked extending into 1916. Generally the situation is quiet and 200 to 300-ton inquiries represent what is going. The speculative iron taken in the last few weeks in the Buffalo, Cleveland and Alabama districts probably runs considerably over 200,000 tons, one English firm being down for 25,000 tons. One Southern company is credited with selling 100,000 tons to non-consumers. Prices have changed little, but are not strong and there is some evidence of special effort to move iron at one or two eastern Pennsylvania points. We quote as follows, at tidewater: No. 1 foundry, $14.50; No. 2 X, $14 to $14.25; No. 2 plain, $13.75 to $14; Southern iron, $14.25 to $14.50 for No. 1 and $14 to $14.25 for No. 2.

Ferroalloys.—It is reported that British producers of ferromanganese have withdrawn their quotation of $88 seaboard, though not all representatives here have been so informed by their principals. What this means is not made clear, but it is regarded as either preparatory to an advance to the neighborhood of $100 or a complete withdrawal from the market so far as forward delivery is concerned. At all events the 10,000 tons or more thus far received under the temporary lifting of the British embargo has decidedly relieved the situation and there is little demand for the alloy outside of that already under contract. A modification of the existing stipulation is reported. The paragraph providing that no steel in the making of which the ferromanganese was used was to be exported is now changed to permit producers of steel to export to the United Kingdom, France or Russia. A marked absence of anxiety on the part of consumers as to future supplies is manifested. It is reported that 30,000 tons of manganese ore from Brazil will soon be received at Baltimore. Business in 50 per cent. ferrosilicon continues good at the ruling quotation of $71 to $73, Pittsburgh.

Structural Material.—The volume of inquiries and contracts has been steadily decreasing for the last two or three weeks and in the past week it has reached the smallest in some time. Very few new projects are reported and scarcely any contracts awarded. The lull is largely attributed to a general conservatism caused by the uncertainty as to this country's relations with Germany. Bids went in on Tuesday on 14,500 tons for section 2, route 49, of the extension to the elevated line in Brooklyn known as the Culver line, this being the largest project before the market. The Lehigh Valley Railroad is asking for bids for 100 tons for extensions to its shops at Sayre, Pa., the inquiry coming through Westinghouse, Church, Kerr & Co. The Pennsylvania Railroad has put out an additional inquiry for bridges amounting to 600 tons, which makes the total for this road now before the trade 2600 tons. Other railroads have asked for bids on small bridges in the last two or three weeks as follows: Virginian Railroad, 200 tons; Southern Railroad, 300 tons; New York, New Haven & Hartford, 300 tons; Lehigh Valley, 400 tons and New York Central, 100 tons. It is reported that the Strathcona apartment house, 700 tons, has been awarded to the Heddon Iron & Construction Company and that an extension to a plant of the New Jersey Zinc Company, 500 tons, has gone to the American Bridge Company. We quote mill shipments at 1.20c., Pittsburgh, or 1.369c., New York, and from store, 1.85c. to 1.90c., New York. It is probable that desirable specifications are going at less than these prices.

Plates.—The Pennsylvania Railroad has placed contracts for not less than 14,000 freight cars of various types and the total may run as high as 15,000. The orders embrace the various inquiries that have been before the market for about three weeks and are for the lines both east and west of Pittsburgh. Details as to the distribution are withheld, but it is stated that they were allotted to six or seven representative car builders. The American Car & Foundry Company received of the total a contract for 300 refrigerator cars, 1700 box cars and 1000 gondola coke cars. The Pressed Steel Car Company also received a considerable share. The awarding is regarded as a distinctly hopeful sign in the present state of the market and as an impulse to purchasing by other roads later. The extra 1000 cars the Chicago & Northwestern is expected to buy will probably go to the Pressed Steel Car Company, which has the contract for the 2000 awarded last week. Further Russian orders for cars reported this week are 2000 for the American Car & Foundry Company, making 6000 in all, though the Pullman Company is reported to have an order for 8000, not confirmed here. The Rock Island is asking bids on 5000 freight cars and the Western Maryland is getting ready to invite bids on 1000 coal cars. The Minneapolis & St. Louis is also about to purchase 1000 freight cars. The domestic plate market is decidedly quiet and the price situation weak. Two inquiries of fairly large tonnage are likely to be closed at a price considerably below the 1.20c. Pittsburgh quotation. Some of this material is for delivery in the third quarter. Small lots, however, are reported to be in considerable volume on which the 1.20c. price is claimed to be maintained. We quote steel plates at 1.15c. to 1.20c., Pittsburgh, or 1.319c. to 1.369c., New York, and from store, 1.85c. to 1.90c., New York.

Iron and Steel Bars.—Export orders and inquiries continue to dominate the market and to be its mainstay. One large producer of steel bars and other finished material states that April was one of the best months in a long time. Domestic business is slow but specifications on contracts are good and there have been no cancellations because of recent international events, though a little more conservatism is manifest. In bar iron the Lusitania disaster is reported to be the indirect cause of some decrease in business but with little change in prices. We quote mill shipments of steel bars at 1.20c., Pittsburgh, or 1.369c., New York, and refined iron bars, 1.20c. to 1.25c., New York. Out of store in New York iron and steel bars are 1.80c. to 1.85c.

Cast-Iron Pipe.—Considerable municipal buying is in progress. Salem, Mass., opened bids yesterday on 25,000 ft. of 36-in. Boston, Mass., will open bids on 150 tons of special pipe for high pressure service May 24; Albion, N. Y., May 26, on 400 tons of 6 to 8-in., and Madrid, N. Y., May 31, on 1200 tons of 4 to 8-in. Private buyers are continually coming into the market to fill requirements, and the volume of this business has recently shown a noteworthy increase. Prices are well held. Carload lots of water pipe, class B and heavier, are quoted at $22 to $22.50 per net ton, tidewater, while class A and gas pipe demand an extra of $1 per ton.

Old Material.—The demand for steel scrap from consumers appears to have completely faded for the present. The steel plants in eastern Pennsylvania are evidently well supplied for their immediate needs, as they are again becoming decidedly critical and rejections are unpleasantly numerous. About the only transactions in this immediate vicinity have been purchases by brokers to cover contracts made some time ago. Prices of steel scrap are slightly lower. Rolling

mills are doing almost nothing in the purchase of old material. Brokers' quotations to local dealers and producers, per gross ton, New York, are as follows:

Old girder and T rails for melting	$8.75 to	$9.00
Heavy melting steel scrap	8.75 to	9.00
Relaying rails	19.00 to	19.50
Rerolling rails (nominal)	9.00 to	9.25
Iron car axles (nominal)	15.25 to	15.75
Steel car axles (nominal)	11.75 to	12.25
No. 1 railroad wrought	10.50 to	10.75
Wrought-iron track scrap	9.50 to	9.75
No. 1 yard wrought, long	9.50 to	9.75
No. 1 yard wrought, short	9.00 to	9.25
Light iron	3.25 to	3.75
Cast borings	5.50 to	5.75
Wrought turnings	6.00 to	6.25
Wrought pipe	8.00 to	8.25

Foundries are buying but sparingly, transactions being confined to small quantities. Quotations to consumers on cast scrap are as follows, per gross ton, New York:

Old carwheels	$9.25 to	$9.50
No. 1 heavy cast, broken up	11.50 to	11.75
Stove plate	8.00 to	8.25
Locomotive grate bars	7.50 to	8.00
Malleable cast (railroad)	8.00 to	8.35

British Market Very Quiet

Ferromanganese Higher — General Conditions Unaltered—Prices Stationary

(*By Cable*)

LONDON, ENGLAND, May 19, 1915.

The pig-iron market remains very quiet. Export business is much restricted and home consumers are well covered to the end of June, there being no disposition to contract ahead. Hematite iron remains inactive. Furnaces in blast are 165 against 168 a year ago. Stocks of pig iron in Connal's stores were 147,071 tons at the close of last week against 145,205 tons one week previous.

Ferromanganese has advanced sharply. There is a little business being done in American semi-finished steel at about the same prices as have recently obtained, but business has been checked by high freights and a poverty in demand for galvanized sheets. Conditions are unaltered in finished steel where efforts continue to be concentrated on national requirements. We quote as follows:

Tin plates, coke 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 18s. ($4.38).

Cleveland pig-iron warrants, market closed.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 65s. ($15.82).

Steel black sheets, No. 28, export, f.o.b. Liverpool, £11 5s. ($54.75).

Steel ship plates, Scotch, delivered local yards, £9 15s. ($47.44).

Steel rails, export, f.o.b. works port, £8 2s. 6d. ($39.54).

Hematite pig iron, f.o.b. Tees, 102s. 6d. ($24.94).

Sheet bars (Welsh), delivered at works in Swansea Valley, £7 ($34.06).

Steel joists, 15 in., export, f.o.b. Hull or Grimsby, £9 10s. ($46.23).

Steel bars, export, f.o.b. Clyde, £10 5s. ($49.88).

Ferromanganese, f.o.b., £20 15s. ($100.98), against £17 15s. ($86.38), last week.

Ferrosilicon, 50 per cent. c.i.f., £14 ($68.13).

Embargo Situation Confusing—Attitude of Labor May Become a National Danger

(*By Mail*)

LONDON, ENGLAND, May 7, 1915.—The Cleveland pig-iron market remains in a somewhat listless state, and the speculative activity which was so strongly in evidence a few weeks ago seems to have pretty well evaporated. The embargo which has been placed upon exports is also a deterring influence. It is very curious to observe the state of confusion in the various Government departments dealing with these embargoes. The confusion grows only more confounded from day to day and no one knows where he stands. Meantime the iron masters of the Cleveland district have combined with their confrères in Scotland with the object of presenting a protest in respect of the embargo to the powers that be.

WAGE ADVANCES DO NOT SATISFY MEN

A moderate amount of business has been done by home trade consumers, but costs are too high. Wages are rising almost every day but there is no satisfying the workers and the entire industrial position is steadily becoming one of the utmost gravity. Within the last day or two the Government's committee of production has refused the Cumberland and North Lancashire blast furnacemen's claim for a war bonus in addition to the 22¾ per cent. increase to which they recently became entitled under the sliding scale which is in operation in the hematite iron producing districts. The committee states that since last July the men have received advances aggregating 28½ per cent.

There is not much business in finished iron, and here as elsewhere the labor problem obtrudes itself very unpleasantly. A few days ago about 1000 men employed by Hingley & Sons, one of the largest makers of iron chain and cable in the country and engaged exclusively upon warship work, went out on strike. Recently the employers voluntarily granted these men a war bonus ranging from 1s. to 4s. (34c. to 97c.) a week, but the men suddenly demanded that all the employees receive the same bonus. The employers refused this and the men are now on strike while national requirements can "go hang." It is impossible to stigmatize too harshly the attitude of the labor party in this country at the present juncture, and there is not the slightest doubt that the grossly unpatriotic attitude adopted in many quarters will become a national danger.

The bulk of the business doing in the steel trade is for Government requirements, but prices of merchant material are firm, though the market is absolutely without feature. Where rails are concerned the business is all being done by the various Colonial works which seem to be simply ravenous for business and the rate at which the new Australian mills have been booking up orders is rather surprising. It is quite clear that the British rail plants have formidable competition to face in some of their favorite markets.

Metal Market

NEW YORK, May 19, 1915.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
May	Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis
12	21.00	18.75	40.00	4.20	4.10	14.25	14.00
13	21.00	18.75	39.25	4.20	4.10	14.25	14.00
14	21.00	18.75	38.75	4.20	4.10	14.50	14.25
15	21.00	18.75	38.62½	4.20	4.12½	15.00	14.75
17	21.00	18.75	39.00	4.20	4.12½	15.25	15.00
18	21.00	18.75	38.25	4.20	4.12½	15.50	15.25

Copper is dull and prices are nominal. Tin is quiet and lower. Lead is inactive but firm. Spelter is higher and excited. Chinese antimony is higher and other grades are unobtainable.

New York

Copper.—Both Lake and electrolytic have been exceedingly dull in the past week and the halt in business has been followed by slight indications of willingness on the part of sellers to meet buyers, but no action has resulted and nominal prices are unchanged. The big rush is over for the time being so far as both domestic and foreign buyers are concerned. Exports are going forward at a good rate, considering all conditions, and so far this month total 19,976 tons. Electrolytic can be had at 18.75c., cash, New York, and possibly 18.62½c., cash, although most of the producers are asking more. Quotations for Lake vary all the way from 19c. for those containing a slight trace of arsenic, to 23c. for choice brands. There has been some talk of England contemplating a large purchase in this market, but nothing has been done beyond inquiry so far as can be learned.

Tin.—The market has been dull except on Friday and Saturday, when an active demand developed with consumers figuring largely as buyers. The dealings were in spot, tin afloat and metal to be shipped from the Far East. It is estimated that between 500 and 600 tons

was dealt in. As previously noted, the arrivals of Banca tin have been heavy in recent weeks, and it now comes to light that practically all of it has been absorbed, especially by users of mixed metals, such as manufacturers of solder, babbitt metal and type-metal. Many of these have heretofore believed that Straits tin was a requisite, but no complaint has been heard from them since they turned to Banca. Prices declined until the New York quotation yesterday was 38.25c. The arrivals this month total 1850 tons, all but 615 tons of which came from England. There is afloat 4285 tons.

Lead.—The market has been dull and uninteresting except for a report that the United States Government was negotiating with a large smelter. The rumor is not credited in the trade. Despite the inactivity, the market is firm at 4.20c., New York, and St. Louis is a little higher at 4.12½c. Export sales have been lighter.

Spelter.—The market for this metal is difficult to gauge. It has been excited both here and abroad and conditions are entirely abnormal. The New York price yesterday for prompt shipment metal was about 15.50c. and that at St. Louis, about 15.25c. The customary differential between the two cities is more or less ignored. As high as 15.25c. has been quoted for December delivery. Brass mill special has been sold at 16c. and 17c. for July and August delivery. The situation is peculiar in that large consumers are in the market for June and July delivery, indicating that they have been buying in a hand-to-mouth manner. Where they wanted immediate shipment they have not been quoted at all in some cases. On May 18 the London quotation advanced £4 ($19.47). The foreign demand has been erratic, with occasional spurts of demand coming from all quarters. Exports this month total 2784 tons. The manufacturers of sheet zinc have advanced their base price to 18.50c., carload lots, at the mill, subject to an 8 per cent. discount.

Antimony.—No quotations are obtainable on Hallett's or Cookson's. Chinese and Japanese are quoted at 34.50c. to 35c., with no offers coming from the East. The available supply is totally inadequate to meet the ordinary demand augmented by war requirements.

Old Metals.—The market is dull. Dealers' selling prices are nominally unchanged, as follows:

	Cents per lb.
Copper, heavy and crucible	17.00 to 17.50
Copper, heavy and wire	16.50 to 17.00
Copper, light and bottoms	14.00 to 14.50
Brass, heavy	11.00 to 11.50
Brass, light	8.50 to 9.00
Heavy machine composition	13.25 to 13.75
No. 1 yellow rod brass turnings	10.25 to 10.75
No. 1 red brass or composition turnings	11.00 to 11.25
Lead, heavy	3.75
Lead, tea	3.50
Zinc, scrap	8.00

Chicago

MAY 17.—Metal values have been sustained for the most part, despite a dull week. There is some pressure to market copper, but, as yet, prices show no weakness. The upward trend of spelter prices is unchanged and deliveries are decidedly uncertain. We quote as follows: Casting copper, 18c. to 18.25c.; Lake copper, 19c. to 19.25c., for prompt shipment; small lots, ⅛c. to ¼c. higher; pig tin, carloads, 40c.; small lots, 43c.; lead, desilverized, 4.15c., and corroding, 4.40c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, nominally, 14.25c.; sheet zinc, 17.50c., or price ruling date of shipment; Cookson's antimony, 40c., for cask lots; other grades, 34c. to 35c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 14.50c.; copper bottoms, 13.50c.; copper clips, 14c.; red brass, 11.75c.; yellow brass, 10.25c.; lead pipe, 3.375c.; zinc, 8.50c.; pewter, No. 1, 27c.; tinfoil, 32c.; block tin pipe, 37c.

St. Louis

MAY 17.—Non-ferrous metal prices are still held high. Lead is quotable at 4.30c.; spelter, 15.50c.; tin, 41.50c.; Lake copper, 19.50c.; electrolytic copper, 19.25c.; antimony, 40c., nominal, none to be had. In the Joplin market the basis range for zinc ores was about $3 per ton lower, 60 per cent. selling at $60 to $75 per ton, with the choicest at $78. Calamine was off $2, selling for $40 to $45 for 40 per cent., with the top settlement $51. Lead ore brought $51 for 80 per cent. Miscellaneous scrap metals are quoted as follows—prices paid by dealers: Light brass, 7.50c.; heavy yellow brass, 9.50c.; heavy red brass and light copper, 11c.; heavy copper and copper wire, 13c.; tinfoil, 34c.; pewter, 24c.; lead, 3.50c.; zinc, 9c.; tea lead, 2.75c.

Iron and Industrial Stocks

NEW YORK, May 19, 1915.

Prices of stocks have fluctuated considerably since our last report, advancing or declining from day to day with the course of sentiment as to Germany's reply to the note sent by the Administration regarding the use of submarines against merchant ships. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chal., com.	13	- 16¾	Nat. En. & St., com.	13½	- 15⅝
Allis-Chal., pref.	42	- 48	Pittsburgh Stl., pref.	74	
Am. Can, com.	30	- 36⅛	Pressed Stl., com.	36	- 45⅞
Am. Can, pref.	94	- 97½	Ry. Spring, com.	25	- 31¼
Am. Car & Fdy., com.	46	- 52½	Republic, com.	24	- 27⅞
Am. Car & Fdy., pref.	112	-114⅝	Republic, pref.	82	- 85
Am. Loco., com.	38	- 47¾	Rumely Co., com.	4⅝	- 6⅜
Am. Loco., pref.	93		Rumely Co., pref.	11	- 16½
Am. Steel Fdries.	30⅛	- 31	Sloss, com.	28	- 34
Bald. Loco., com.	39½	- 49	Pipe, com.		12½
Bald. Loco., pref.		100	Pipe, pref.	40	- 42
Beth. Steel, com.	125	-142	U. S. Steel, com.	49⅞	- 55½
Beth. Steel, pref.	110	-111⅛	U. S. Steel, pref.	104⅝	-107¼
Case (J. I.), pref.		82	Va. I. C. & Coke.	37	- 38
Colorado Fuel	24	- 28	West'gh'se Elec.	83½	- 93⅜
General Elec.	145	-153	Chic. Pneu. Tool.	50	- 56½
Gt. No. Ore Cert.	29	- 33¾	Cambria Steel	46¼	- 49
Int. Harv. of N. J., com.	91	- 96	Lake Sup. Corp.	6¾	- 7½
Int. Harv. of N. J., pref.		110¼	Pa. Steel, pref.		50
Int. Harv. Corp., com.	60	- 65	Warwick		9½
Int. Harv. Corp., pref.		100	Cruc. Steel, com.	20	- 23⅝
Int. Pump, com.		5⅞	Cruc. Steel, pref.	85¾	- 88
Lackawanna Stl.	37	- 44	Harb.-Walk. Ref., pref.		98
			La Belle Iron, com.	30½	- 31
			La Belle Iron, pref.		107

Dividends

The General Electric Company, regular quarterly, 2 per cent., payable July 15.

The Harbison-Walker Refractories Company, regular quarterly, ½ of 1 per cent. on the common stock, payable June 1.

The Underwood Typewriter Company, regular quarterly, 1 per cent. on the common stock and 1¾ per cent. on the preferred stock, both payable July 1.

The Moline Plow Company, regular quarterly, 1¾ per cent. on the first preferred stock, payable June 1.

Changes in American Institute of Metals

The American Institute of Metals is submitting to its membership changes in its constitution which have been approved by a majority of the executive committee. Four classes of members are provided for: Honorary members, corporation members, active members and associates. The corporation members are firms or corporations engaged in the manufacture or use of non-ferrous alloys. An active member is any person engaged in the production, founding, working or finishing of non-ferrous metals or ferroalloys. An associate is any person interested in the objects of the institute. The annual dues of corporation members as proposed will be $25; of active members, $10, and of associates, $5.

The plans for the reorganization of the Alton Steel Company, Alton, Ill., have been successfully completed and checks have been mailed to all the creditors and the stockholders who accepted the proposition made by the reorganizers, headed by H. C. Fownes, of Pittsburgh. The settlement was made on a basis of 40 per cent. to the creditors and 2½ cents on the dollar to stockholders. It will take about $150,000 to put the plant on its feet and this will be provided by Pittsburgh capitalists. The plant, which has been closed about a year, will be reopened by the new controlling interests shortly.

The next annual meeting of the National Association of Iron & Steel Electrical Engineers will be held in the Hotel Statler, Detroit, Mich., September 8 to 11.

An Unusual Furnace Record with Dry Blast

A noteworthy record was made in April by furnace B of the Steel Company of Canada's plant at Hamilton, Ontario. The furnace was operated with dry blast carrying an average of 0.826 grains of moisture per cubic foot. The average moisture in the atmosphere during the same period was 2.841 grains per cubic foot. The yield of ores for the month was as follows: For basic iron, 50.64 per cent.; for foundry iron, 51.55 per cent.:

Basic Iron

1915, April	Product, gross tons	Average silicon	Coke per ton, lb.	
1	474	1.25	2016	
17	445	1.09	2073	
18	418	1.00	1976	
19	463	1.08	1861	
20	412	1.00	2151	
21	473	1.09	1892	
22	483	.85	1818	
23	453	.95	1917	
24	418	1.05	2100	Lost 38 min. tuyeres
25	479	1.05	1833	
26	438	1.10	1965	
27	432	.89	1914	Lost 55 min. tuyeres
28	463	.73	1861	
29	456	.87	1925	
30	473	.64	1802	Lost 55 min. tuyeres
Average	452	.97	1911	

Foundry Iron

April				
2	326	2.71	2532	
3	374	3.15	2256	
4	347	3.25	2407	
5	368	2.90	2200	
6	371	2.31	2156	
7	379	2.23	2067	
8	383	2.60	2177	
9	390	2.97	2140	
10	389	3.16	2102	
11	391	2.98	2137	
12	380	3.08	2198	
13	387	3.01	2201	
14	418	2.63	2038	
15	417	2.70	2000	
16	398	2.60	2030	
Average	381	2.82	2157	

This blast furnace plant and Gayley dry blast equipment were designed by and erected under the supervision of Frank C. Roberts & Co., Philadelphia. R. G. Wells is manager of the works and C. A. Grimes is blast furnace superintendent.

President William P. Palmer and the other officers of the American Steel & Wire Company were at Birmingham, Ala., last week, the inspection of the Fairfield plant of the company in that district being part of the semi-annual inspection tour. The party, in company with President George G. Crawford, of the Tennessee Coal, Iron & Railroad Company, went out from Birmingham to the Warrior River, on which navigation is now possible the year round. The dedication of Lock 17, near Tuscaloosa, Ala., last week, was celebrated by the business interests of Birmingham, in conjunction with those of Tuscaloosa and Cordova.

At the annual dinner given by the Michigan Bolt & Nut Works, Detroit, Mich., to its foremen and heads of departments at Hotel Statler, May 15, the guest of honor was Daniel Sullivan, who has been with the company continuously for 50 years. Souvenirs of the occasion were artistic booklets containing pictures of the officers of the company from its organization to the present time and a poetical tribute to Mr. Sullivan.

A large fireproof addition to the branch plant of Joseph T. Ryerson & Son, at St. Louis, has been completed. It is equipped with a 10-ton traveling crane, 85-ft. span. The building is 85 x 300 ft. and 65 ft. high, of structural steel framed with metal frame skylights. This is the old Hagar Iron Company plant, which was bought about a year ago, and the enlargement has been brought about by increased business.

The St. Louis Foundrymen's Association had its annual summer banquet May 15, the principal feature being a paper read by F. C. Henke, American Steel Foundries, on "The Practical Side of the Manufacture of Shrapnel." He exhibited American-made shrapnel. Present at the dinner was President R. A. Bull, of the American Foundrymen's Association, who is connected with the Commonwealth Steel Company.

Promoting Russian-American Trade

Stating that one of the most important drawbacks to Russian-American trade has been the question of credit and that exports coming from the United States were almost exclusively paid f.o.b. the port of departure so that Russia had recourse to the American market only when absolutely necessary, Consul-General John H. Snodgrass, of Moscow, Russia, says in Commerce Reports:

"The European war presents an opportunity to substitute American goods for those formerly used, and special energy is noted in the foundry and machine-building industries. A bank in New York has opened a credit of $25,000,000 to the Russian Asiatic Bank (Petrograd), which will be employed for payment of purchases made by Russian importers. This has so interested financial circles in the United States that, according to information at hand, a group of capitalists is planning to offer to any Russian bank a loan not exceeding $15,000,000 on the following conditions: On all sums paid out in the United States on account of the above credit 6 per cent. is to be charged, the money is to be returned 30 to 40 days after the credit has been exhausted, if required. Payment is to be made in London; after payment the loan can be renewed. Goods will be forwarded c.i.f. Russian ports on condition that the Russian Government or one of the large banks guarantees payment of the drafts when presented."

Decreasing Imports of Manganese Ore

Imports of manganese ore into this country in March, 1915, were only 398 gross tons, compared with 18,992 tons in March, 1914. For the nine months ended with March, this year, the imports of such ore were only 158,985 tons, against 212,270 tons in the nine months to April 1, 1914, and 338,967 tons to April 1, 1913, a decrease of 25.1 per cent. from 1914 and 52.9 per cent. from 1913.

At least 150 locomotives are reported as being before the market. The French Government has issued specifications for 125 to 150 large locomotives, while the Western Maryland is asking for 15 of the Mallet type. The Cuba Railroad has ordered 15 locomotives from the American Locomotive Company, and the Fort Worth & Denver City 10 Mikado type from the Baldwin Locomotive Works, while the American Locomotive Company will convert 10 consolidated type to Mikado type for the Boston & Albany. The Serbian Government is said to have ordered about $50,000 worth of small locomotive parts from the American Locomotive Company. The Pennsylvania Railroad has ordered 25 modern heavy consolidated freight locomotives from the Lima Locomotive Corporation and 25 from the Baldwin Locomotive Works.

Chairman Davies, of the Federal Trade Commission, announces that a series of hearings will be held on the general subject of the desirability of combinations of manufacturers and exporters for the exploitation of foreign trade. One will be at the headquarters of the Chamber of Commerce in Boston, Mass., June 1 and 2, and another at the New York custom house June 3, 4 and 5. The object will be to secure the views of prominent manufacturers and exporters who either favor or oppose legislation exempting export combinations from the operation of the anti-trust laws.

The Munson Mill Machinery Company, a new corporation, has succeeded the Munson Brothers Company, Utica, N. Y., having purchased the business and plant, with the good-will, patterns, etc. The officers are: President, George A. Bowman; vice-president Abra L. Williams; treasurer and manager, George W. Lasher; secretary, George A. Niles. The new company will continue along the lines already established, manufacturing Munson grain grinding mills, milling machinery, grain and coal elevator machinery, power transmission, etc.

The Lehigh Coke Company, South Bethlehem, Pa., is figuring on the erection of a benzol plant.

Death of John Birkinbine

John Birkinbine, among the most widely known of American engineers, died, May 14, from heart failure, at his home near Philadelphia, Pa., after a long illness, aged 71 years. He was born in Reading, Pa., and was the eldest son of the late H. P. M. Birkinbine, a distinguished hydraulic engineer. He was graduated from the Polytechnic College of Pennsylvania, saw a year's service in the Civil War and afterward was made assistant to his father, who was then engineer of the Philadelphia water supply. Removing to Lebanon, Pa., he became a member of the firm of Weimer & Birkinbine, operating the Weimer Machine Works and specializing in blast-furnace equipment. His attention was thus drawn to furnace practice and in a few years he was made manager of the South Mountain Mining & Iron Company, then producing charcoal pig iron at Pine Grove furnace, Cumberland County, Pa. Here he conducted interesting and successful experiments in the use of other fuel than charcoal.

The Pine Grove experience was apparently the turning point in Mr. Birkinbine's career, for from that time he gave his attention to blast-furnace and iron-ore matters. As a consulting engineer he was employed for expert examination in almost every State in the Union and in Canada and Mexico, and his engineering knowledge was in constant demand by large European corporations. He was intimately concerned with the engineering problems and the mining industry in Mexico. For the State of Texas he made an investigation of the practicability of the iron manufacturing industry there. The blast furnace at West Duluth, Minn., was built under his supervision and a number of furnaces elsewhere in the country were rebuilt or remodeled by him. He organized the United States Association of Charcoal Iron Workers, and served for years as secretary and also as editor of its Journal.

Photograph by Gutekunst

JOHN BIRKINBINE

For some years Mr. Birkinbine was consulting engineer for the Philadelphia & Reading Iron Company and held a similar position with the Colorado Fuel & Iron Company and with Witherbee, Sherman & Co. Thomas A. Edison engaged him in the same capacity in his early experiments on magnetic concentration of iron ore. He was for a long period of years in the employment of the United States Geological Survey as expert in charge of iron-ore statistics and iron-mining developments. He designed and constructed plants for the utilization of water supplies in various parts of the United States.

He took a leading part in the formation of the Pennsylvania Forestry Association, and had been its president for 23 years. Since its inception in 1905 he had been chairman of the Water Supply Commission of Pennsylvania.

Mr. Birkinbine was active in the affairs of the American Institute of Mining Engineers, and served two terms as president. His voluminous literary contributions on technical subjects and his engineering achievements brought him many marks of recognition by American and foreign societies. In 1892 he became president of the Franklin Institute, Philadelphia, and held this position for 10 years. He was a member of the Engineers' clubs of Philadelphia and New York, the American Society for Testing Materials, the Manufacturers' Club of Philadelphia and an honorary member of the Canadian Mining Institute. He was president of the Engineers' Club of Philadelphia in 1893. He leaves his widow, four sons and six daughters.

Appreciation of Mr. Birkinbine

The following tribute to the memory of this distinguished engineer has been received from Charles Kirchhoff, former editor in chief of *The Iron Age:*

"To John Birkinbine was accorded a longer span of varied activities than was given to the majority of professional men during that unique period of our country's history when it struggled out from its swaddling clothes industrially to attain undisputed first rank. A pioneer in some lines of work, he kept in the van to the end of his life. Yet he was not carried off his feet by every innovation of brilliant promise. His clear, critical mind demanded evidence. Thus, during the great fight of fire-brick versus cast-iron stoves, while fully recognizing the advantages of the new invention, he was not ready to scrap every cast-iron stove over night. And taught the caution which is the best guarantee of orderly progress, he had the courage to be a conservative when professional enthusiasm was in danger of running away. His work as secretary of the United States Association of Charcoal Iron Workers did wonders for a minor branch of the industry long neglected and apparently absolutely addicted to the rule of some methods.

"When he began his work as a statistician of the iron-mining industry, a considerable number in this as in other lines guarded their figures of production as a sacred business secret, to be revealed only to a man possessing a national reputation for integrity and discretion. Needless to say, he secured complete statistics from the outstart. He kept in close touch with developments for more than a generation and was probably the best informed engineer in the country concerning the iron-ore resources of all parts of the United States.

"As an engineer, the most striking feature of his character was his unflinching devotion to high professional ideals. His rugged honesty brooked no equivocation. His clients heard the truth and nothing but the truth, however unpalatable it might be. Only his closest friends ever suspected what sacrifices he made in pursuing that course. For 50 years he gave a very unusual share of his energies and of his time to promoting the welfare of the engineering profession. His record as president of the Franklin Institute and as president of the American Institute of Mining Engineers speaks for itself. Chosen to leadership after many years of devoted service, he redoubled his labors while president and gave his successors freely his co-operation, his advice and his support. In John Birkinbine the engineering profession and the iron industry have lost one of their truest and noblest members."

While a young man, Mr. Birkinbine established an engineering office in Philadelphia with his father. This office has since been uninterruptedly conducted and is now continued by his sons in the Parkway Building, Broad and Cherry streets. The family trend in engineering has thus been maintained over 60 years.

The National Founders' Association has just issued another of its valuable bulletins, treating this time "Good Light—An Important Safety Factor." Artificial light is discussed particularly, the various methods of producing this being fully presented. Precautions to be observed in the use of each kind as well as valuable recommendations are suggested.

Pittsburgh and Nearby Districts

Some 50 of the South American capitalists and business men, who expect to attend the Pan-American Conference at Washington, D. C., May 24 to 29, will be entertained at Pittsburgh June 2. Col. H. B. Bope, vice-president Carnegie Steel Company; E. M. Herr, president Westinghouse Electric & Mfg. Company, and J. Rogers Flannery, president Flannery Bolt Company, representing the Pittsburgh Foreign Trades Commission, will confer with a committee representing the Pittsburgh Chamber of Commerce to arrange the programme.

The Pennsylvania Public Service Commission has rendered a decision favorable to the Adrian Furnace Company, DuBois, Pa., in its case against the Pennsylvania Railroad, ordering it and the Buffalo, Rochester & Pittsburgh to make reasonable joint rates on pig iron from DuBois to Huff, Johnstown, Wilmerding and Uniontown, Pa.

J. G. Chalfonte, county engineer, and E. K. Morse, consulting engineer, Pittsburgh, have forwarded to the War Department, Washington, D. C., for approval, detailed plans for a new Ohio River bridge at McKees Rocks, Allegheny County, Pa., to be built by the county. The bridge will have the longest span in Pittsburgh harbor, 1100 ft. The cost is estimated at $1,596,562. About 11,000 tons of steel will be required.

The McKeesport Tin Plate Company, McKeesport, Pa., which will build 20 more hot tin mills, has not yet sent out inquiries for nine electric cranes. The plans are being made by S. Diescher & Sons, consulting engineers, Farmers Bank Building, Pittsburgh, and it will be several weeks before bids will be asked on any of the equipment.

The plant of the American Locomotive Company on the North Side, Pittsburgh, which has been idle for some time, will start in partial operation in a few days for the repairing of about 50 locomotives for the Seaboard Air Line. It is stated positively that this plant will not manufacture shrapnel or other war material for which the company has recently taken large contracts.

The Carnegie Steel Company has placed a contract with the Pennsylvania Engineering Works, New Castle, Pa., for two new hot blast stoves for its No. 4 blast furnace at that place.

The plants of the National Enameling & Mfg. Company and the Youngstown Car & Mfg. Company at Youngstown, Ohio, were damaged by fire last week to the extent of about $20,000. William Wilkoff, president of both companies, states that the plants will be rebuilt.

The Standard Tin Plate Company, Canonsburg, Pa., has its engineers at work on plans for a material enlargement of its present equipment of 10 hot mills. It is expected that possibly 12 hot mills will be provided for. A definite decision may be made shortly.

The city of Alliance, Ohio, has placed a contract with the Pittsburgh-Des Moines Steel Company, Pittsburgh, for a 40,000-gal. steel tank.

The plant of the Standard Steel Car Company at New Castle, Pa., was damaged by fire last week to the extent of about $150.000. The company was engaged in turning out shells for Europe, the plant having been working for some time on an order for 6000 6-in. Rebuilding will be pushed, and there will be little delay in filling the order.

Plans are under way to reorganize the West Virginia Limestone Company, Wheeling, W. Va., with $50,000 capital and to install a new crushing equipment. The company will crush sandstone for building purposes and concrete work.

At Louisville, Ky., last week, an examination was made by officials of the Amalgamated Association and a committee from the sheet and tin-plate manufacturers, as to the average prices realized on shipments in March and April. It was found that the prices were below the new basis of the sheet and tin-plate scale, so that wages in May and June in mills that sign the Amalgamated scale will be the same as in March and April. The regular bi-monthly examination of prices realized on shipments of iron bars in March and April was also made there, the Amalgamated Association being in convention in that city, and it was found that the average price was close to 1.05c. Wages of puddlers in May and June will therefore be $5.60 per gross ton, as against $5.50 in March and April.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, expects to use the gas from its new Koppers by-product coke ovens in operating the heating furnaces in its skelp mills, pipe mills, wire plant at Struthers, and also in the additional finishing mills that it expects to erect this year, but the full details of which have not yet been worked out. The company further expects to have sufficient gas from the ovens to use part of it in the open-hearth furnaces. None of this gas will be used under boilers, as greater efficiency will be obtained by using it elsewhere. If the price of benzol keeps up and the company can make a contract for its sale, a benzol plant may be decided upon next February in addition to other new work under advisement.

The Erie Stove & Mfg. Company, Erie, Pa., through its architect, Armin Schotte, Erie Trust Building, will receive bids until noon, May 23, for the erection of a one-story brick factory, 200 x 250 ft., to cost about $75,000. It will be of steel frame, with steel sash.

The Federal Radiator Company, New Castle, Pa., recently organized, has taken over the plant of the Penn Motor Company and will manufacture steam and hot water boilers and radiators. It is stated that the company will erect several new steel buildings and will be in the market for considerable equipment. The incorporators are Parker H. Cunningham and David Jameson, of New Castle, and C. F. Morrow, Pittsburgh.

The H. Koppers Company, First National Bank Building, Pittsburgh, has taken a contract from the Allegheny By-Product Coke Company, Glassport, Pa., for the erection of a benzol plant.

Pittsburgh Foundrymen's Association

The monthly meeting of the Pittsburgh Foundrymen's Association was held in the Fort Pitt Hotel on Monday evening, May 17, preceded by a dinner. H. J. Koch, Fort Pitt Steel Casting Company, McKeesport, Pa., president, was in the chair, and F. H. Zimmers, secretary. The pleasing feature of the proceedings of the evening was the unanimous vote making J. S. Seaman, Seaman-Sleeth Company; Robert Taylor, formerly of the Taylor-Wilson Mfg. Company, and William Yagle, a well-known former foundryman in Pittsburgh, honorary life members of the association. J. S. Seaman is also an ex-president of the American Foundrymen's Association. These three were among the original foundrymen in Pittsburgh that met to form the Pittsburgh Foundrymen's Association, and all have rendered valuable services to the society. Messrs. Seaman and Yagle were present and made short addresses, expressing their appreciation of the honor conferred upon them. C. S. Lomax, general superintendent of the Lehigh Coke Company, South Bethlehem, Pa., read a paper on the subject of "The Development of By-Product Oven Practice in Foundry Coke." The next meeting of the association, which will also be the annual meeting, at which officers will be elected, will be held in the Pittsburgh Country Club, June 21. No meeting will be held during the summer months.

The South Chester Tube Company, Chester, Pa., is remodeling its plant, installing new furnaces and modern machinery for the manufacture of lap weld wrought-iron pipe. This company will also assume the control of the butt weld department of the Susquehanna Rolling Mill Company, Columbia, Pa., for the purpose of manufacturing butt weld pipe. This will give the South Chester Company pipe for its trade in sizes from ⅛ in. to 13 in. inclusive, all weights and characters within the range included. The management of the mill at Chester, Pa., remains as heretofore. E. T. Edwards will be in charge at Columbia and P. N. Guthrie, Jr., will have his headquarters at Chester, in general charge of sales.

RAILROADS LOSE LAKE LINES

Commerce Commission Ends Monopoly—Way Open for Independents

WASHINGTON, D. C., May 18, 1915.—In a sweeping decision of the highest importance to both the carrying and shipping interests of the country, the Interstate Commerce Commission has divorced the steamship lines on the Great Lakes from the railroads which heretofore have owned and operated them. The decree takes effect December 1, prior to which the owning corporations must effect such a bona fide reorganization as will satisfy the commission that there has been a complete separation of interests. The decision, which is based on the Panama Canal law, forbidding railroad ownership of competing water lines except where it can be shown that public convenience and necessity are served thereby, not only destroys the monopoly of Lake transportation heretofore controlled by the principal Eastern trunk lines, but opens up the field of water transportation from Duluth via the Erie Canal and Hudson River to the Atlantic seaboard, to any independent competing steamship lines that may desire to enter the business.

This case was brought before the commission on a petition of the Pennsylvania, Northern Central, Lehigh Valley, New York Central, Rutland, Erie, Grand Trunk and Lackawanna railroad companies seeking to retain their fleets which, though operated by separately incorporated transit companies, have been run in harmony with the respective proprietary railroads under through rate schedules devised, according to the commission, for the purpose of monopolizing the traffic on the Lakes. These through rates governed transportation from the seaboard to Buffalo by rail and thence by water to upper Lake ports. The return traffic, originating at upper Lake ports and west thereof, is likewise subject to through rates framed by the rail carriers. The land lines of the railroads skirting the shores of the Lakes serve competing territory and the lake-and-rail and all-rail rates are so manipulated, according to the findings of the commission, that competition has been stifled. The boat lines under the control of the petitioning railroads, the commission says, have been first a sword and then a shield. When these roads succeeded in gaining control of the boat lines which had been in competition with paralleling railroads in which they were interested, and later effected their combination through the Lake Line Association, by which they were able to and did drive all independent boats from the through lake-and-rail transportation, they thereby destroyed the possibility of competition with their railroads other than such competition as they were of a mind to permit. Having disposed of real competition via the Lakes, these boats, the commission asserts, are now held as a shield against possible competition of new independents. Since it appears from the records that the railroads are able to operate their boat lines at a loss where there is now no competition from independent lines, it is manifest that they could and would operate at a further loss in a rate war against independents.

"Under independent operation," says the commission in summarizing the effect of this order upon the commerce of the country, "each of the lines which is now owned and operated by a railroad, in order to survive, will become a competitor of every other boat line and of every paralleling railroad for all traffic which moves by the Great Lakes or which might move over that route, and the result of such operation will be reflected in the character of service furnished the public and in the rate charged therefor. The boat lines operating on the Great Lakes, in conjunction with the barge lines operating on the Erie Canal, furnish a through water route from Western Lake ports to the Eastern seaboard. It is significant from the records in these cases that the through route arrangements and the interchange of traffic between Lake lines and these canal barge lines have been terminated under the joint ownership of the Lake lines, and the traffic has practically disappeared, to the injury of the boat lines and of the Erie Canal barge lines on eastbound traffic. It is contrary to the interests of the owning railroads operating from Buffalo east for their boat lines to continue any through operating arrangement with these canal barge lines for the movement of eastbound traffic. There is no power in this commission to require the establishment of a through route between these railroad-owned Lake lines and barge lines operating the Erie Canal, but under divorcement the Lake lines will be free to make arrangements for the through carriage of freight in connection with the Erie Canal barge lines, and it will be to their interest to do so. The interests of the shipping public will be conserved and those of the boat lines will be bettered in this respect under divorcement."

W. L. C.

Jurors of Exhibits at the Panama-Pacific Exposition

The judging of exhibits at the Panama-Pacific International Exposition at San Francisco is now in progress. The personnel of such of these juries as are of particular interest to readers of *The Iron Age* is given below:

The international jury in the department of machinery, covering steam engines, boilers and accessory apparatus, internal combustion motors, hydraulic motors and motors operated by heated air or other means consists of eight men, one of whom, Andrea Gianini, is from Italy. The others are: Capt. B. C. Bryan, U. S. N., bureau of steam engineering, Washington, D. C., chairman; Prof. H. W. Hibbard, professor of mechanical engineering, University of Missouri, Columbia, Mo.; John Hunter, chief engineer, Union Electric Light & Power Company, St. Louis; F. R. Low, editor of Power, New York; Prof. C. E. Lucke, professor of mechanical engineering, Columbia University; Engineer in Chief C. A. McAllister, U. S. Coast Guard, Treasury Department, Washington, D. C., and Wynn Meredith, consulting engineer, with Sanderson & Porter, San Francisco.

The jury on general machinery and accessories, covering cranes, conveying machinery, belting, gearing and other means of power transmission, pumps, compressors, packing, lubricating systems, lubricants and metal for bearings, is as follows: George M. Brill, mechanical engineer, Berkeley, Cal., chairman; Harry Bringhurst, fire marshall, Seattle, Wash.; Prof. Wm. H. Kavanaugh, professor of mechanical engineering, University of Minnesota, Minneapolis; Thomas Morrin, consulting engineer, San Francisco; Calvin W. Rice, secretary American Society of Mechanical Engineers, New York City; Jesse M. Smith, consulting engineer, Oakland, Cal.; N. A. Bowers, Pacific coast editor, McGraw Publishing Company, and Emil S. Fischer, China.

The jury on "tools for shaping wood and metals," including forging hammers and presses, shears and punches, riveting machines, heat-treating equipment, soldering metals, machine tools, bolt and nut machines, metal saws, grinding machines, machine tool attachments, hand tools for machinists and wood-working machinery, is composed of William H. Crosby, president the Crosby Company, Buffalo, N. Y.; George W. Dickie, consulting engineer, San Francisco; Prof. John T. Faig, professor of mechanical engineering, University of Cincinnati, Cincinnati; F. J. Frank, *The Iron Age*, New York City; J. C. Mengel, master mechanic, Pennsylvania Railroad, Altoona, Pa., and D. S. Watkins, assistant superintendent of shops, Southern Pacific Company, Sacramento.

On the manufacture, distribution and uses of gas for light and fuel, on apparatus and processes for heating and ventilation and on apparatus and methods for lighting by acetylene, oils, etc., the following jury is at work on exhibits made under the department of manufactures: Paul Doty, St. Paul, Minn., chairman; John M. Morehead, Chicago, as the acetylene expert; H. B. McLean, president Commercial Gas Association, New York; Frank A. Cressy, Jr., Modesto, Cal.; L. P. Lowe, president California Light & Fuel Company, San Francisco, and Ernst Kahl, Guatemala.

Covering cutlery, hardware and woodenware, plumbing and sanitary materials and apparatus, and safety appliances, exhibited in the Palaces of Manufactures and Liberal Arts, the jury is as follows: Roy F. Soule,

Hardware Age; T. M. Sherman, Hardware World; William Hutton, Hutton Brothers Company, Winsted, Conn., and Fred Dohrmann, San Francisco, representing Germany.

For the department of mines and metallurgy a group jury was appointed, divided into a number of committees. The committee on metallurgy is as follows: W. R. Appleby, University of Minnesota; Dr. F. G. Cottrell, United States Bureau of Mines; T. T. Read, Mining and Scientic Press; J. W. Richards, Utah, and Bradley Stoughton, New York.

For judging electrical exhibits, a jury was appointed by the chiefs of four different departments, to reduce the total number and size of juries and the duplication of effort. Under the head of machinery are grouped motors, transformers, electric lamps, switchboards and storage batteries. In the Palace of Manufactures are found electro-thermal apparatus and insulating materials for electricity. In the Palace of Liberal Arts are exhibited electrical methods of communication, and of course electricity finds a large place in the Transportation Palace. The electrical jury on electrical matters, in addition to Vito Capastini, Italy, and Charles Penderton, Australia, is as follows:

Appointed by chief of department of machinery—Carl Hering, consulting engineer, Philadelphia; Prof. C. M. Jansky, electrical engineering, University of Wisconsin, Madison, Wis.; Wm. H. Onken, managing editor, Electrical World, New York; C. P. Poole, consulting engineer, Atlanta, Ga. Appointed by chief of department of transportation—George A. Damon, dean of engineering, Throop College of Technology, Pasadena, Cal.; A. H. Babcock, electrical engineer, Southern Pacific Company, San Francisco. Appointed by chief of department of manufactures—Prof. V. Karapetoff, professor of electrical engineering, Cornell University, Ithaca, N. Y.; Prof. H. J. Ryan, professor of electrical engineering, Leland Stanford University, Palo Alto, Cal.; Guy L. Bayley, chief of electricity, Panama-Pacific International Exposition. Appointed by chief of department of liberal arts—A. J. Halloran, managing editor Journal of Electricity, Power and Gas, San Francisco; Charles A. Rolfe, president Southwest Home Telephone Company, Redlands, Cal.; Frank Wolfe, government exhibit, Palace of Liberal Arts.

The Powell's Fort Manganese Mines, which are about 11 miles by wagon road from Woodstock, Va., idle for some years, will resume work at once. H. P. Binswanger, 30 East Forty-second street, New York, is interested in the undertaking. Mining operations will be under the supervision of J. Carson Adkerson, who has been connected with the Piedmont Manganese Corporation and its successor, the Oxford Mining & Manganese Corporation, operating a property at Concord, Va. The Powell's Fort Mines produced a high grade pyrolusite ore for many years. The deposit is one of the most extensive thus far exploited in this country, parallel veins running a distance of about two miles. Besides the high grade ore above referred to, which is especially adapted for chemical purposes, a good grade of ore for making ferromanganese was formerly taken from the property. Shipments are expected to be made very shortly.

Operations at the plant of the United States Cast Iron Pipe & Foundry Company at Bessemer, Ala., have been suspended while work on additions that will practically double the capacity of the plant is in progress. The improvements will cost about $250,000 and will make this establishment the largest of its kind in the South. The structural steel work is being done by the American Bridge Company.

The Dayton Steel Foundry Company, Dayton, Ohio, has placed an order for a one-ton Snyder electric furnace with the Snyder Electric Furnace Company, 53 West Jackson boulevard, Chicago. This furnace will melt and refine cold scrap on a basic lining, producing refined steel castings. The Dayton Company makes a specialty of castings for the automobile and machinery trade.

The 45-Cent Iron Ore Rate on Old Ranges Sustained

WASHINGTON, D. C., May 18, 1915.—The iron mining companies in the Gogebic, Iron River, Iron Mountain and Marquette sections of the Upper Peninsula of Michigan have been defeated in their attack upon the rates of the principal carriers in that region for hauling their ore to Ashland, Wis., and Marquette and Escanaba, Mich., and loading it on vessels. The Interstate Commerce Commission sustains the present blanket rate of 45 cents and notwithstanding the fact that a discrimination against certain shippers is conceded to be involved it is held that this does not amount to an unlawful preference. The complainants in the case are the Newport Mining Company, American-Boston Mining Company, et al., Hayes Mining Company and Corrigan, McKinney & Co., the defendants being the Chicago & Northwestern, Minneapolis, St. Paul & Sault Ste. Marie, Duluth, South Shore & Atlantic and the Chicago, Milwaukee & St. Paul railroad companies.

From 1898 until January, 1913, the defendants maintained a rate on iron ore of 40 cents per gross ton from all mines in the peninsula to the hold of vessel at nearest port, either Ashland or Escanaba, except that from the mines between Ishpeming and Marquette the rate was 25 cents, and west thereof the rate was 30 cents to the hold of vessel at Marquette. At the beginning of the year 1913 the defendants simultaneously filed tariffs continuing the former rate, but limiting the service to originating the ore and hauling it to the dockyard at the port. An additional charge of 5 cents per gross ton was published for the following service:

> Storage in cars at dockyards, unloading from cars to docks, storage in docks, and loading from docks to vessels, if loaded into vessels within 10 days from arrival of cars at dockyards. When not loaded into vessel within 10 days, a storage charge for each day or fraction thereof after the first 10 days, one-fourth cent per ton of 2240 pounds per day. Except that this storage charge shall not be made during the closed season of lake navigation, i. e., the interval between the departure of the last vessel and the arrival of the first vessel.

This service was formerly included under the old rate. The change in the tariffs became effective during the closed season, when there was no movement of ore, but as soon as the 1913 season opened the carriers were called upon in these complaints to justify the increased charges. The carriers insisted that more revenue was required and that iron ore could reasonably bear a higher rate. Increases in the cost of labor and materials and comparison with ore and coal rates elsewhere were urged in further defense. In its decision, after finding that the 45-cent rate is reasonable, the commission takes up the claim of the Newport Mining Company that the system of grouping all the mines in the Gogebic and Menominee ranges and applying to all mines alike the blanket rate of 45 cents results in unjust discrimination prejudicial to it. It has been made to appear nowhere in the record, says the commission, that the Newport Mining Company is damaged by having to pay the same rate to Ashland as the mines in the Menominee range pay to Escanaba; on the other hand, it does appear that the character of its ore is such that it can compete with the ores from the Menominee range in the market at the same rate. W. L. C.

Small Exports of Manganese Ore from India

Manganese ore exports from India in January, 1915, were only 26,950 tons, compared with 50,900 tons in January, 1914. This is a decrease of 23,950 tons or 47 per cent. All the January shipments went to Great Britain, whereas in 1914 shipments were made to Belgium, France, Italy and the United States. In February this year the exports were only 17,316 tons, all going to Great Britain. In February, 1914, the exports were 44,950 tons. In the first 11 months of the fiscal year ending March, 1915, the total exports of manganese ore from India were 424,459 tons against 652,132 tons in the first 11 months of the fiscal year of 1914, a decrease of 35.3 per cent.

OBITUARY

David M. Parry

David Maclean Parry, who, as president of the National Association of Manufacturers, first brought that organization into direct antagonism toward labor unions that had adopted violent methods, died at his home in Indianapolis, Ind., May 12, aged 64 years. He was born on a farm near Pittsburgh, Pa., and had a varied experience. Starting life as a dry goods clerk he was graduated from the Cincinnati Law School and for a short time practiced law. Removing to New York

DAVID M. PARRY

City, he became a reporter on the New York Herald, and next ran a newspaper in Montana. He then went to Indiana where he bought a hardware store, the business growing until he owned a chain of such stores. In 1882 he acquired a wagon shop in Rushville, Ind., and removed the business to Indianapolis, where he developed it into the largest of its kind in the world, with an output of 1000 vehicles a day.

Mr. Parry founded the Overland automobile factory and business, which he later sold to his former superintendent, John Willys, for $250,000. He also gave Henry Ford his first financial assistance when he started in the automobile business. He built and was president of the Indianapolis Southern Railroad, now part of the Illinois Central system, and also built and was president of the Indianapolis-Newcastle traction line. Among his other investments he owned the controlling stock of the Jenney Electric Light Company of Indianapolis and was heavily interested in the Motor Mfg. Company, maker of the Pathfinder automobile. He was a former president of the National Association of Carriage Builders, the Indiana Manufacturers' Association, the Citizens Industrial Association of America, the Indianapolis Board of Trade, and the Indianapolis Commercial Club. He was active and influential in politics but declined political offices. He retired from active participation in manufacturing in 1911. At the time of his death he was president of the American Educational Society. During the greater part of 1914 he was abroad as a member of the Foreign Trade Commission of the National Association of Manufacturers, and was taken ill on the return voyage with the malady that caused his death. He leaves his widow and nine children.

GEORGE H. RUSSEL, Detroit, Mich., died May 17, aged 67 years. He was born in Detroit and entered the employ of the Gaylord Iron Company when he was 16 years old. Later he became yard foreman of the Detroit & Lake Superior Iron Mfg. Company, and in 1868 was appointed secretary and treasurer of the Detroit Car Works and the Hamatramck Iron Works. In 1878, with Walter S. Russel, he organized the Russel Wheel & Foundry Company, of which he was elected president. Becoming interested in banking, in 1889 he was elected president of the State Savings Bank, which was consolidated with the People's Savings Bank, under the name of the People's State Bank, of which he was made president. At the time of his death he was vice-president of the Russel Wheel & Foundry Company and the Great Lakes Engineering Works, and a director of the Union Trust Company of Detroit and the American Car & Foundry Company. Besides these he was a director of the Detroit City Gas Company and the Canada Life Assurance Company and treasurer of the Detroit United Railway. He was president of the American Bankers' Association in 1898. He leaves his widow and three children.

MARSHALL CUSHING, former secretary of the National Association of Manufacturers, and more recently the editor and publisher of How, a magazine for manufacturers, died May 12 at the Post-Graduate Hospital, New York City, after an operation for appendicitis. He was born in Hingham, N. Y., in 1860 and was a graduate of Exeter Academy and Harvard University. He had much newspaper experience and was for a time private secretary to Senator Lodge and secretary to John Wanamaker, at that time Postmaster General. Mr. Cushing was for some years a special representative in Washington for the National Association of Manufacturers and the National Founders' Association.

JOHN HARE, Wilmington, Del., died May 9, aged 70 years. He was born near Wilmington, and in 1861 entered the offices of the Lobdell Car Wheel Company. In 1872 he embarked in the iron business as a member of the firm of Hare & Morgan, Second and Poplar streets, Wilmington, which place is now occupied by the B. F. Shaw Company. Later he became connected with the Diamond Steel Company and still later was with the Johnson Forge Company. For the last eight years he was assistant treasurer of the Ogden-Howard Company, Wilmington. He leaves his widow, four sons and two daughters.

J. DREW ALLEN, formerly associated with the Chicago sales office of the Pennsylvania Steel Company and later representing the Taylor-Wharton Steel Company in the Pacific Northwest, met with a fatal accident at Salt Lake City while making an examination of rails for a local traction company. He sustained a compound fracture of the skull and died May 16. He was about 33 years old. In his selling experience he had made a specialty of street railway track work.

ROBERT A. MCCORD, vice-president Hecla-Winslow Company, Brooklyn, N. Y., died at his home in Greenwich, Conn., May 14, aged 43 years. He was born in New York City, was a son of the late William McCord, and for a time was associated with his father in the steel fabricating business. He leaves his widow and a son. Frank B. McCord, of Post & McCord, is his brother.

MICHAEL WESTER, junior member of Martin & Wester, foundrymen and plow manufacturers, Port Washington, Wis., died last week, aged 80 years. He was a native of Luxemburg, Germany, and established the foundry with Mr. Martin in 1863.

GEORGE A. BAGLEY, Watertown, N. Y., president, Bagley & Sewall Company, manufacturer of papermaking machines, died May 12, aged 87 years. He was a member of Congress for his district from 1875 to 1879.

I. B. Williams & Sons, manufacturers of leather belting, have removed their office and warehouse from 72 Murray street to much larger quarters at 71 and 73 Murray street, New York. Greatly improved facilities will here be enjoyed for handling their growing business. Their manufacturing plant is located at Dover, N. H. H. L. Baugher is manager of the New York branch.

PERSONAL

S. S. Brill, Manchester, N. H., special agent of the Department of Commerce, has returned from an eight months' trip through South America, investigating the market for shelf hardware. Starting from Para in northern Brazil, he visited every important city in Brazil, Uruguay and Argentina, crossing the Andes into Chile and visiting the important business points in the republics on the west coast of South America, returning via the Panama Canal. Part of Mr. Brill's report has been submitted to the Department of Commerce and he is now engaged on the remainder. In addition to interviewing a large number of importers and dealers in South America, Mr. Brill procured samples of the most salable articles of other than American manufacture, also catalogues and price lists of European manufacturers.

Robert Noyes Fairbanks, director of W. Bayliss & Co., Ltd., London, England, who came to this country some months ago for the purpose of making arrangements for the representation of American manufacturers in foreign countries, has returned from a trip to England where he went in connection with the business of his company. Having received many inquiries for machinery and products which cannot be obtained in England at present, he is making arrangements to secure them here. Mr. Fairbanks is making his headquarters at the New York office of the Brown Hoisting Machinery Company, 50 Church street.

C. E. Lesher, associate geologist of the land-classification board of the United States Geological Survey, has been assigned by the director of the survey to take charge of the work of compiling the statistics of coal production published in the annual volume, "Mineral Resources." This work has heretofore been directly under Edward W. Parker, whose resignation from the Geological Survey is effective July 1. Mr. Lesher is a graduate of the Colorado School of Mines and was engaged in mining in British Columbia until 1910, when he came to the United States Geological Survey. Since then as a field geologist he has had experience in the coal fields of Montana, Colorado, Wyoming, North Dakota, Washington, and Oregon.

Edward Ehlers, president of the Rockaway Rolling Mill, Rockaway, N. J., has returned from a two months' vacation in California.

James A. Campbell, president Youngstown Sheet & Tube Company, Youngstown, Ohio, has been elected president of the Youngstown Chamber of Commerce, succeeding Joseph G. Butler, Jr., who had held the office for eight years.

Carl J. Schumann, secretary, and Herman Uehlinger, credit manager, of the Moller & Schumann Company, varnish maker, Brooklyn, N. Y., have gone to the Pacific coast. They will combine business with pleasure, visiting the San Francisco branch office and the Exposition, and then proceed south to look over the Los Angeles territory and visit the San Diego Exposition.

A. C. Pletz having resigned, James Rushworth is now the general manager and secretary of the Aurora Tool Works Company, manufacturer of upright drill presses, Aurora, Ind.

F. T. Windle, Bloomington, Ill., has been appointed manager of the Kansas City branch of the Janesville Machine Company, Janesville, Wis., to succeed J. H. Stubbins, resigned. For the last four years Mr. Windle has been manager of the Eastern Moline Plow Company, Bloomington, Ill.

Arthur W. de Revere has been appointed district sales manager of the Terry Steam Turbine Company, with offices at Chicago, Ill.

The Hofius Steel & Equipment Company, Seattle, Wash., announces that, owing to the retirement from the company of A. A. Hilton and the death of W. W. Williams, officers are now as follows: George J. Danz, president; M. A. Arnold, vice-president; Philip Kitchin, secretary-treasurer; James F. Howie, general manager.

Charles H. Morton, widely known in the roofing trade in the Central West, has joined the sales force of the Globe Iron, Corrugating & Roofing Company, Cincinnati, Ohio.

A. W. Merritt, of Fox & Merritt, Sidney, Australia, spent last week in Cincinnati, visiting the different machine-tool plants.

L. F. Scott, Canadian representative of the Foos Gas Engine Company, Springfield, Ohio, spent several days last week at the company's headquarters.

Z. T. K. Woo, of the Hanyehping Iron & Coal Company, of China, who has made an extensive tour of this country, sailed for home from San Francisco May 15. Owing to conditions the contract for the two new blast furnaces his company is to build will not be placed for two or three months.

J. G. Butler, Jr., Youngstown, Ohio, president of the McKinley Memorial Birthplace Association, announces that the Jones & Laughlin Steel Company has given $5000 toward the memorial, which is to be erected in Niles, Ohio. Mr. Butler has also arranged with B. F. Jones, Jr., to have a bronze bust of B. F. Jones, Sr., placed in the memorial building.

William M. Byrd, of the Hammond-Byrd Company, pig-iron and cast-iron pipe broker, Birmingham, Ala., has removed to Chicago to establish and manage a branch office for his company.

Full Liability of Railroads Without Increase of Rate

WASHINGTON, D. C., May 18, 1915.—A comprehensive opinion as to the proper construction of the Cummins amendment to the interstate commerce law, enacted for the purpose of prohibiting the railroads from limiting their liability for the loss or damage to property transported by them, has been handed down by the Interstate Commerce Commission, in which it is held that the carriers cannot lawfully avail themselves of the stipulation in the uniform bill of lading now in use that the assumption of unlimited liability justifies a 10 per cent. increase in rate. The commission further holds that the Cummins amendment covers goods carried by express as well as by freight; that it applies to baggage checked on passage tickets; that it does not relate to exportations or importations of merchandise; that actual value at the time of shipment must govern in the settlement of claims; that shippers are bound by their own statements as to the character of goods which are concealed by wrapping, boxing, etc., and that if it shall appear after a reasonable period of test that the assumption by the carriers of full liability results in a serious burden, the commission will consider applications for such relief as may be necessary to indemnify them for the increased risk imposed upon them by the new statute. Incidentally, the commission gives notice that, in view of the fact that carriers cannot now give the statutory 30 days' notice of changes in the terms of bills of lading, classifications and rates schedules in time to become effective on June 3, when the new law goes into force, such changes will be approved on three days' notice, provided the amendments do not have the effect of increasing rates or charges.

Few opinions of the commission have had a broader bearing upon the commerce of the country or have embodied so many points of importance to shippers as that just handed down. The rulings embraced therein are prefaced by a synopsis of the history of the uniform and standard bills of lading, followed by a résumé of the contentions of the carriers in the several classification territories as laid before the commission at the recent hearing on the Cummins amendment. The commission then takes up in order the questions raised by both carriers and shippers under the new law and answers them categorically, stating, however, that the conclusions thus expressed are, of course, subject to judicial review. W. L. C.

Judicial Decisions

ABSTRACTED BY A. L. H. STREET

LIABILITY OF RETIRED PARTNER.—Dissolution of a partnership does not of itself release the retiring partner from liability for the price of materials contracted for by the firm and partly furnished before the dissolution. (California District Court of Appeals, Asbestos Mfg. & Supply Company vs. Lenning-Rapple Engineering Company, 146 Pacific Reporter 188.)

AUTHORITY OF CORPORATE OFFICERS.—The treasurer or secretary of a business corporation has no implied authority by virtue of his office to bind the company by contracts, unless he is, also, intrusted with management of the corporation's affairs within the scope of which the transaction lies. But where a manufacturing company ordered a quantity of wrenches, its general superintendent had authority to bind the company by approving a sample submitted by the seller. (Rhode Island Supreme Court, Roren Drop Forging Company vs. Union Mfg. & Drop Forging Compony, 92 Atlantic Reporter 1018.)

SCOPE OF PATENT CLAIM.—In a claim covering a pioneer patent for an alloy "containing cerium alloyed with iron," the word "iron" should be interpreted as including equivalents to iron, as well as iron proper. The equivalency of other metals is to be determined, not from their chemical structure, but from their functional efficiency. (United States Circuit Court of Appeals, Second Circuit, Treibacher-Chemische Werke Gesselschaft Mit Beschrankter Haftung vs. Roessler & Hasslacher Chemical Company, 219 Federal Reporter 210.)

CONCLUSIVENESS OF ACCOUNT RENDERED.—A debtor's failure to object within a reasonable time to the correctness of an itemized statement rendered by his creditor precludes the debtor from afterward denying its correctness, but it is open to the creditor to show that there was an inadvertent omission from the account. (Springfield, Mo., Court of Appeals, Friedman, Keller & Co. vs. Olson, 173 Southwestern Reporter 28.) [This failure of the rule to "work both ways" is evidently based on the fact that the debtor's possession of the statement gives him better opportunity to discover any mistake in it.—THE EDITOR.]

ASSUMPTION OF RISK BY RIVETER.—An employee of a boiler company who was directed to go to the top of a smokestack 16 ft. above the ground, to place a bolt in the stack, assumed the risk of his foot slipping from the edge of the stack and thereby causing him to fall, if the danger to which he was subjected was obvious, especially in the absence of any showing that it was practicable to have provided him with a platform on which to do his work. (Springfield, Mo., Court of Appeals, Huskey vs. Heine Safety Boiler Company, 173 Southwestern Reporter 16.)

RESERVATION OF TITLE NOT WAIVED BY SELLER.—When machinery is sold under a contract which reserves title in the seller until payment of the purchase price, he does not waive that lien by the mere fact of extending the time for payment or agreeing to a different method of payment. (Arkansas Supreme Court, Summers vs. Carbondale Machinery Company, 173 Southwestern Reporter 194.)

DEFENSES TO NOTES IN HAND OF THIRD PERSON.—A machinery company which became the owner of a note given another machinery company for the price of machinery sold by the latter may recover the amount of the note although the note was given under an oral promise by the original holder to make certain repairs on the machinery sold; the maker of the note having known that the note would probably be transferred to a third person, and the company which bought the note having no knowledge of the existence of the oral agreement mentioned. (South Carolina Supreme Court, Gibbes Machinery Company vs. Hamilton, 84 Southeastern Reporter 296.)

TELEGRAPH COMPANY'S LIABILITY.—When an order for goods is transmitted by telegraph and, through mistake of an operator, as delivered it calls for more goods than the sender intended to order, but he accepts the excess shipment, knowing of the excess, he cannot recover against the telegraph company for any loss sustained by him. (Mississippi Supreme Court, Barrett Grocery Company vs. Western Union Telegraph Company, 67 Southern Reporter 481.)

LIABILITY FOR INJURY CAUSED BY UNGUARDED MACHINERY.—An employer is liable for death of a workman while operating a lathe, if the accident was caused by an unguarded condition of the lathe which it was practicable to guard, as required by the Ohio factory act. In an action to recover damages in such a case, the employer cannot rely upon a defense of contributory negligence or assumption of the risk on the part of the employee, if the employer had previously elected not to be governed by the Ohio workmen's compensation act. The mere fact that the State inspector of factories has not required guards to be placed on lathes under similar circumstances is not conclusive evidence of impracticability of guarding them. (United States Circuit Court of Appeals, Sixth Circuit, Crucible Steel Forge Company vs. Moir, 219 Federal Reporter 151.)

INJURY CAUSED BY UNGUARDED COGWHELLS.—An employee who was directed by his foreman to tighten a set screw on a drill press did not assume the risk of being injured through his hand slipping from the screw into cogwheels which the employer permitted to remain in an unguarded condition, in violation of the Indiana factory act. (Indiana Appellate Court, Wyatt vs. American Car & Foundry Company, 108 Northeastern Reporter 12.)

AUTHORITY OF TRAVELING SALESMEN.—A customer in dealing with a traveling salesman acts at his peril, so far as the seller is concerned, in matters beyond the actual or apparent scope of the salesman's authority. The fact that a salesman is empowered to take orders does not imply authority to collect the price of goods, and a payment embezzled by the salesman will be no defense to the customer's liability to the seller, unless it appears that the latter authorized the payment. Authority in a salesman to collect cash does not empower him to receive a note, check or draft payable in the future. (Arkansas Supreme Court, Hadley Milling Company vs. Kelley, 174 Southwestern Reporter 227.)

BUYER'S REMEDY AGAINST DEFECTIVE MACHINERY.—When machinery delivered and installed under a contract of sale fails to come up to that called for by the agreement, the buyer may return it or notify the seller to take it away, removing it from the foundations to which it has been affixed, at the seller's expense. As an alternative remedy, the buyer may retain the machinery, and enforce a claim for damages arising from the defective character of the machinery. (New York Supreme Court, Nassau County, Smith vs. Hedges, 152 New York Supplement 95.)

DUTY TO WARN LABORER OF DANGER.—Where a common laborer had assisted in operating a steam derrick by handling a rope over a winch head, but the rope had always been a soft and pliable one, his employer is liable for injury afterward sustained by him if it was directly attributable to failure to notify him of the necessity of making more wraps around the winch with a new and stiff rope, unless the employee knew that fact. (Indiana Supreme Court, Shepp vs. Indiana Bridge Company, 108 Northeastern Reporter 107.)

DELIVERY OF GOODS SHIPPED.—When goods are shipped to a retail merchant by a manufacturer on order from a wholesale dealer or jobber, the bill of lading designating the retail merchant as the consignee, title to the shipment passes to the latter on delivery of the shipment to the railroad company. (Alabama Supreme Court, H. Altman & Co. vs. Alabama Great Southern Railroad Company, 67 Southern Reporter 589.)

LIABILITY OF TELEGRAPH COMPANIES.—Even though a telegraph company makes a mistake in transmitting a business telegram, neither the sender nor addressee can recover damages which could have been avoided by the exercise of ordinary care on his part, after discovering the mistake. (Kansas City Court of Appeals, Harrington vs. Western Union Telegraph Company, 174 Southwestern Reporter 169.)

Machinery Markets and News of the Works

STOCKS ABOUT EXHAUSTED

Tool Builders Sold Up for Months Ahead

Second-Hand Machines Share Scarcity—Long Deliveries Restrict Contracts—Greater Activity Spreading Steadily

Stocks of new and second-hand standard machine tools of the types and sizes most used in the manufacture of munitions of war have been wiped out in New York, Cincinnati and elsewhere. Meanwhile the demand is as great as ever, and it includes to a decidedly appreciable extent the larger machines, the call for which was slow in getting under way. The question of delivery has in more than one instance been the determining factor where it was proposed to take up the manufacture of war materials. In other cases, manufacturers who need tools have found it impossible to get them. General business is showing a marked improvement in New England, largely because of the spreading of war orders. The makers of automobiles and accessories are well engaged in Detroit and the demand for machine tools is satisfactory. Some business with the railroads is reported in Milwaukee, but there also the greatest activity is traceable to the war and automobiles. The demand for lathes in Cleveland is unlimited, and deliveries can only be made several months ahead; the demand for automatic machinery, both domestic and foreign, is heavy and sales of second-hand tools are being made for export. In Chicago the activity of Canadian purchasers overshadowed all other interests last week. In that city railroads' inquiries are still outstanding. Cincinnati tool builders report that the foreign demand is still unprecedented. The St. Louis market continues quiet. In Texas the principal demand is for oil-well machinery and supplies. Both inquiries and orders for machinery are gradually increasing in the Pacific Northwest, although the larger shops still confine their purchases to single tools for replacements. In most industries the scale of operations is increasing.

New York

NEW YORK, May 19, 1915.

Business in machine tools which are used in the manufacture of arms and ammunition, shrapnel and high explosive shells is limited only by the extent to which deliveries can be made. The delivery question is so important that it has more bearing on determining the course of those to whom sub-contracts are offered than have the costs and prices involved. Not a few domestic consumers have been unable to get machines and some of them feel aggrieved. The tool builders regret this phase of the situation, for they are frank in saying that they would much prefer to sell in scattered lots to their regular customers, rather than to a few concerns who take a great many machines. They are making reservations out of every lot of machines put through their factories, but the domestic demand has so increased that the number so far reserved has proved inadequate. The builders are having no pleasant time with the pressure they are encountering on all sides.

A number of manufacturing companies are turning their attention to the production of new lines and in practically every case fresh equipment is wanted. Deliveries, however, range from July to November, and it is only a few types of machines that can be delivered in the earlier month. In some cases salesmen have worked hard in time heretofore to introduce their machines in certain factories, having in view the obtaining of future orders. It was realized that not only do operators become prejudiced in favor of tools with which they become familiar, but there is also the desirability of interchangeability of cutting tools and parts. Yet, today repeat orders have to be declined. The call for radial and upright drills and miscellaneous tools is rapidly growing better.

Dealers in second-hand tools say that their warehouses have been stripped of good machinery.

The Westinghouse Electric & Mfg. Company, which has purchased the plants of the J. Stevens Arm & Tool Company, Chicopee Falls, Mass., and of the Stevens-Duryea Company, Chicopee Falls and East Springfield, has sold some of the equipment which those plants contained and has ordered other machinery better suited to its needs. It is understood that the plants will be used in the manufacture of rifles for a foreign power. The Westinghouse Electric & Mfg. Company has been working on a similar contract at its East Pittsburgh works.

Large purchases inspired by the war have been made by the Remington Arms Company, Bridgeport; the Scoville Mfg. Company, Bridgeport; the Poole Engineering Company, Baltimore, and the East Jersey Pipe Company, Paterson, N. J. The pipe company bought heavy turret lathes with which it is to make high explosive shells of the Russian design. The Poole Engineering Company, which has a plant at Woodberry, Md., bought Reed-Prentice lathes and Modern turret lathes, taking 20 machines on delivery as early as possible and reserving 20 more for later shipment. The Baldwin Locomotive Works has an inquiry out for about 50 24-in. turret lathes for delivery to Russia, and another, also from Russia, for nut, rivet and washer equipment embracing about 200 machines.

The Harrisburg Mfg. & Boiler Company has combined with the Walter Morton Truck Company, Harrisburg, and is to fill an order for 30 tractors for Russia, with a prospect of getting repeat orders.

An interesting phase of the present situation is that the large manufacturers who have taken war orders are building plants to take care of their new line of output, reserving their regular facilities for a revival of demand for their standard products. Small companies, of course, cannot easily do this.

Several of the motor truck and automobile manufacturers have lately made purchases, among them the International Motor Company, the Pierce Arrow Company and the Locomobile Company of America. The latter company is equipping a new plant at Bridgeport, Conn.

The plant of the Lozier Motor Company, Plattsburg, N. Y., will be sold at public auction, beginning May 25. The company has concentrated its manufacturing at Detroit, Mich. The value of the property to be sold is estimated at $1,000,000. It includes many tools bearing well-known names, such as would be found in a large automobile plant, as well as a large quantity of small tools and supplies. Cranes and motors are included also. The Lozier marine department will be sold in one lot as a going business. The real estate comprises 15 brick buildings, containing 145,000 ft. of floor space.

Exports are keeping up good. One large exporting house, in order to keep its organization supplied with machines to sell, has placed orders for the delivery of a specified number of machines each month. In some cases shipments will not begin until July. To assist foreign buyers the Allied Machinery Company of America is sending a group of expert demonstrators to Europe.

The report that Gabriel & Schall, 205 Pearl street, New York, are erecting a plant at New Market, N. J., for the manufacture of asphalt products, composition floors, etc., is incorrect. The plant will manufacture chemicals.

Mark & Mohl, Inc., Brooklyn, N. Y., manufacturer of ornamental and structural iron and steel, announces the removal of its works and office from 273 Russell street to Third avenue and Sixth street, in quarters recently constructed for its use. It is installing additional equipment.

The Buckingham Steel Company, 25 West Forty-second street, New York, has recently established a plant for the

fabrication of structural and ornamental iron at Second avenue, from Fifty-sixth to Fifty-seventh street, Brooklyn. It has recently closed contract for the structural steel work for the factory to be erected at Forty-fourth near Third avenue, Brooklyn, for Frank A. Aliano, 4518 Sixth avenue, Brooklyn, to be two stories, 80 x 100 ft. Other contracts include the erection of an addition to the plant of the United States Nickel Company, New Brunswick, N. J., and a power house, boiler house and coal pocket, to be erected at Yorktown Heights, N. Y., for the New York State Training School for Boys.

The F. H. Ogden Company, 9 Clinton street, Newark, N. J., engineer, is remodeling the former plant of the Universal Caster & Foundry Company, on Jackson street, Newark. A new 150-kw. direct-current generator is specified. The cost of the improvements will be about $32,000.

Harry Grattan, 523 East Fourteenth street, Brooklyn, N. Y., has drawn plans for a one-story brick factory, 22 x 150 ft., to be erected for Robert Freeman, 522 East Fourteenth street, at a cost of about $7500. The machinery equipment has been purchased.

The Hind Steel & Wire Works, Inc., Huntington, L. I., N. Y., is in the market for a second-hand rolling mill, equipped with 8-in. rolls, 6 in. in diameter. W. A. DeGroot is in charge of purchases.

It is reported that the T. A. Gillespie Company, 50 Church street, New York, plans to erect a powder mill in Fairville township, near Metuchen, N. J., on the opposite bank of the Raritan River from the plant which it is reported is being erected by interests headed by Lewis E. Nixon of New York. It is further stated that these two plants, together with the near-by plant of the E. I. DuPont De Nemours Powder Company, will employ approximately 4000 men for the manufacture of explosives.

The Morris Machine Works, Baldwinsville, N. Y., suffered a loss of its pattern storehouse and patterns, valued at about $14,000. Replacement of the losses will be made as fast as possible. R. C. Scott is secretary.

The Chevrolet Motor Company, Tarrytown, N. Y., has purchased 17 acres of land, along the Hudson River, between its two plants, but does not intend to build on it at present.

The Coronet Cork & Seal Company, Bush Terminal, Brooklyn, N. Y., has placed orders for a number of presses with the E. W. Bliss Company, Brooklyn. All of the company's machinery will be equipped with Westinghouse motors. It has placed an order with the Washington Tinplate Company for 8000 boxes of tin-plate.

The Cayuga Power Corporation, Ithaca, N. Y., has been incorporated with a capital stock of $75,000 to generate and distribute electric current for power and lighting purposes. F. S. Connette, 132 Remsen street, Brooklyn; H. Stanley, South Orange, N. J., and W. M. Rose, Montclair, N. J., are the directors.

The Polson Mfg. Company has broken ground at Main street and Lafayette avenue, Buffalo, for the erection of a new factory, 85 x 100 ft., two stories, of reinforced concrete, to cost $35,000. The company, now located at 27 Chenango street, manufactures windshields and folding seats for automobiles.

The Peerless Phonograph Company, New York City, recently incorporated with a capital stock of $50,000, will manufacture phonographs, musical instruments, etc. B. H. Janssen, 82 Brown place; G. A. Widmann, 335 East 133d street, and W. H. Fische, all of New York City, are the incorporators.

The Morse Mill & Basket Factory, Westfield, N. Y., destroyed by fire April 29, is to be rebuilt.

The Lighting Office Specialty Company, Rochester, N. Y., has filed incorporation papers to manufacture office specialties, letter openers, etc. The capital stock is $125,000. G. B. Cogswell, H. C. Nobles, Rochester, and W. B. Thurston, Livonia, N. Y., are the directors.

Incorporation papers have been filed by the New Milk Aerator Company, Syracuse, N. Y., to manufacture machines for aerating milk, etc. C. P. Delong, 1106 South Salina street; E. L. Hill and M. C. Greene, Syracuse, are the incorporators. The capital stock is $50,000.

The Phoenix Toilet & Paper Mfg. Company, Phoenix, N. Y., has let contract for erection of a two-story and basement factory, 48 x 62 ft.

The Penn Yan Film Corporation, Penn Yan, N. Y., has been incorporated with a capital stock of $250,000 to manufacture cameras, motion picture films, projection machines, etc. The incorporators are G. S. and E. R. Sheppard, Penn Yan, and J. A. Serena, Keuka Park, N. Y.

Hyde & Wood, Gloversville, N. Y., have completed plans for a four-story addition to their glove leather manufacturing plant. Bids for construction will be taken at once.

The Fastpress Company, Eddyville, N. Y., has filed articles of incorporation with a capital stock of $50,000 to manufacture printing presses, paper box machinery, etc. E. Wald, 230 West 141st street, New York City; F. E. Caye, New York City, and M. C. Lynch, Jersey City, N. J., are the incorporators.

Herman Higler, 91 East Fulton street, Gloversville, N. Y., has let contract for erection of an addition two and four stories, to be made to his factory.

Philadelphia

PHILADELPHIA, PA., May 17, 1915.

It is reported that the Landis Tool Company, Waynesboro, Pa., which recently awarded contract for the erection of an addition to its plant, 100 ft. square, to H. K. Gearhart, will have the addition ready for operation in the near future.

The Keever Box & Lumber Company, Schuylkill Haven, Pa., has started work on an addition to its box factory. Most of the new machinery has been contracted for.

The Camden Forge Company, Camden, N. J., is erecting a one-story steel forge shop 92 x 175 ft. Contract for this building has already been let and work is under way. After completion, it will be occupied as a steam forge and machine shop. The hammer and machine tool equipment will be of the large type to enable the company to take care of heavy work.

The Ajax-Grieb Rubber Company, Brennig avenue, Trenton, N. J., is taking bids through its architects, W. W. Slack & Sons, Trenton, for the erection of a one-story addition to its rubber factory, 28 x 88 ft.

W. O. Howland, Chester, Pa., top roller manufacturer, suffered a total loss of his stock, tools and machinery in a recent fire. He has leased a part of the plant of the Arasapha Mfg. Company, Tenth and Walnut streets, Chester, and is fitting it up. He expects to be ready for operations soon. It is also reported that the fire, which caused about $75,000 damage, destroyed several other plants housed in the same building.

The Mechling Bros. Mfg. Company, Camden, N. J., has awarded a contract to F. L. Hoover & Sons, 1023 Cherry street, Philadelphia, for the construction of a three-story brick addition, 38 x 100 ft.

The Firestone Tire & Rubber Company, Akron, Ohio, will occupy a garage on Wood street, west of Broad, Philadelphia, for its solid tire shop and garage. It is having a second story erected at a cost of about $6000. H. Cassel is in charge.

The Vulcan Iron Works Company, Wilkes-Barre, Pa., plans to add the manufacture of sugar-making machinery to its business, but will not require any new buildings or equipment.

Baltimore

BALTIMORE, MD., May 17, 1915.

Several war orders were received in Baltimore the past few days, and more are expected. At least one plant will have to install machinery, and if the orders continue others will have to do likewise. The great amount of business being done by the Du Pont de Nemours Powder Company, Wilmington, Del., is said to be causing many men to leave the steel plants in Wilmington to accept employment with the Du Pont Company.

The Poole Engineering & Machine Company, Woodberry, Md., or which S. Proctor Brady is president, will have to install machinery for the manufacture of shrapnel jackets. It has received a contract for these parts involving about $500,000 and said to be for the Russian Government.

The Davison Chemical Company, Garrett Building, Baltimore, has received a contract from the E. I. Du Pont de Nemours Powder Company, Wilmington, Del., for a large quantity of sulphuric acid. It is said the price will be about $1,000,000 and may be increased by $300,000.

The Baltimore Dry Docks & Shipbuilding Company, Baltimore, has been incorporated with a capital stock of $1,100,000 and will take over the business and the two shipyards of the Skinner Shipbuilding Company, which recently went into the hands of receivers. The officers will be elected shortly. The incorporators are Stuart S. Janney, George W. Williams and L. Vernon Miller, Baltimore lawyers. The Skinner property was sold at auction recently and was bid in for the bondholders, in whose interest the new company was formed.

The Harlan & Hollingsworth Corporation, Wilmington, Del., has let a contract to Fred A. Havens & Co., 845 North Nineteenth street, Philadelphia, for the construction of a two-story addition, 45 x 200 ft.

Kastenhuber & Anderson, acting town engineers, Easton,

Md., will receive bids until noon May 25 for pumps and equipment for a sewage disposal works to be erected at Easton, Md.

The Penn Construction Company, Baltimore, has been incorporated with a capital stock of $20,000 by Howard G. Clark, Equitable Building, Baltimore; Edward P. Pendleton and William P. Farrell.

Machinery will be required for a garage being constructed at 1722 West North avenue, Baltimore, by the Consolidated Engineering Company, Calvert Building, for William J. Tickner & Sons, North and Pennsylvania avenues, Baltimore. With the present building the plant will be 240 x 380 ft. It is also planned to enlarge the machine shop connected with the garage, including the installation of a charging plant.

Machinery to cost about $14,000 will be required by the American Reduction Works, Wilmington, Del., which is building a plant at Marsh road and the Baltimore & Ohio Railroad, Wilmington, Del., at a cost of about $6000.

The Maryland Metal Ceiling Company, Baltimore, has been incorporated with a capital stock of $5000 by Heister C. Headley, Louisa Doll and Frank E. Perry.

New England

BOSTON, MASS., May 19, 1915.

General business is showing a marked degree of improvement, not all along the line, perhaps, but in a substantial way, according to business men and bankers generally. The influence of the great orders for war materials for Europe has extended broadly. A great number of manufacturing plants are engaged actively on this class of business, though in some cases the connection is somewhat remote.

In every instance where large projects are under way the demand for machinery is very great. It makes no difference that works acquired by those who accept these orders have modern tools; the necessity for machines to increase and balance the equipment is imperative. The lists of requirements are long; but these contractors are shy in stating their needs.

Most important is the experience of the New England machine tool builders with contracts which indicate that the Remington-Union Metallic Cartridge Company will not stop with its great rifle manufacturing works now in process of construction in Bridgeport, Conn., to produce 3000 rifles a day. According to the general understanding of those close to the situation, through inquiry and orders, the proposal is to establish works somewhere in the vicinity of Philadelphia, on a still larger scale—probably producing 5000 rifles a day. At any rate, machine tool orders for such a factory have been placed.

The American Locomotive Company has announced that its works at Providence, R. I., formerly devoted to the building of automobiles, will be reopened for the manufacture of parts for shrapnel shells.

The Laconia Car Company, Laconia, N. H., has accepted a contract for the manufacture of shrapnel shells.

The contract has been awarded for the initial buildings of the plant of the newly created Bridgeport Projectile Company, which will be located on Union avenue, Bridgeport, Conn. The machine shop will be two stories, 60 x 350 ft., with an ell 60 x 100 ft., and the forge shop will be 100 x 400 ft., one story. The personnel of the company has not been given out, but it is understood that the business is affiliated with the American & British Mfg. Company, Bridgeport. It is stated that the construction of other buildings will proceed in the near future.

The Locomobile Company of America, Bridgeport, Conn., will erect a one-story building, 50 x 60 ft., for a case-hardening department.

The American Emery Wheel Company, Providence, R. I., is adding a story to a building 45 x 99 ft.

The Waterbury-Farrel Foundry & Machine Company, Waterbury, Conn., manufacturer of machinery, will further increase its plant by raising one of the present buildings.

The Fiske Rubber Company, Chicopee Falls, Mass., proposes to erect several new buildings, including an office structure 60 x 160 ft., six stories, to release space for manufacturing purposes in the present office building, and a storehouse 110 x 310 ft., six stories.

The Baird Machine Company, Bridgeport, Conn., has acquired the business of the Warner Brothers Machine Company, of that city, manufacturer of tumbling barrels, according to a published report. The machinery will be removed to the Baird works on Stratford avenue.

A movement is on foot in Worcester, Mass., for the erection of a large industrial building on Federal street. Maurice F. Reidy is at the head of the enterprise. Several modern structures of this type have been built in Worcester in the past few years, and the space has been quickly taken. The latest, the Osgood Bradley Building, which is very large, is practically filled with tenants, though only recently completed.

The Parker Wire Goods Company, Worcester, Mass., has moved its factory to the Osgood Bradley Building. The company has been located in the building of the L. W. Pond Machine & Foundry Company, manufacturer of gray-iron castings, occupying the upper floor of a large building. This space will be occupied by the owners for increasing its manufacturing capacity.

The Eastern Machine Screw Company, New Haven, Conn., has commenced the erection of a one-story addition, 41 x 81 ft.

The additional factory of the North & Judd Mfg. Company, New Britain, Conn., will be 52 x 120 ft., five stories. Also an existing factory, 60 x 112 ft., will be raised two stories.

The Waterbury Clock Company, Waterbury, Conn., will erect an additional factory, 42 x 82 ft., two stories, which will be used for a watch crystal manufacturing department.

The Lewis A. Crossett Company, North Abington, Mass., will erect a shoe factory in Augusta, Me., 44 x 250 ft., four stories.

Chicago

CHICAGO, ILL., May 17, 1915.

The activity of Canadian buyers overshadowed all other interests in this market last week. Lathes in particular were in demand and it is stated that in the sizes from 14 in. to 30 in., about 150, or all of the available tools at Chicago, were taken. While the abnormal character of such business brings with it some disadvantages, the machinery interests are finding their current sales profitable to a degree quite cheerful as contrasted with preceding months. Strictly domestic business, and there are few orders indeed which do not in their source originate from export demand, shows little growth. Railroad inquiries are still outstanding, although buying by the Burlington is definitely expected this week.

The A. Finke & Son's Company, 2000-2024 Kingsbury street, Chicago, maker of hammered and drop forgings, has purchased property upon which buildings covering about 35,000 sq. ft. of floor area will be erected. It finds its present capacity inadequate to the business available.

The Western Drop Forge Company, Marion, Ind., is increasing the capacity of its power plant by 700 hp., and is in the market for a grinder and sprue cutter for its finishing room and equipment for its die tooling department.

The MacMurray Steel Hoop Company, Chicago, of which J. E. MacMurray, president of the Acme Steel Goods Company, is the organizer, has been incorporated with a capital stock of $50,000. The company may be addressed at 2834 Archer avenue.

The Universal Stamping & Mfg. Company, Chicago, has been formed by John A. Bussian, George C. Peterson, 1703 North Artesian avenue, and Edward J. Bussian. It has $10,000 capital stock and will manufacture metal stampings, hardware and tools.

The Henry Bireline Company, Danville, Ill., has been organized by Henry Bireline, Walter Meck and Robert F. Bireline, with a capital stock of $25,000 to manufacture and erect sheet metal work.

The Mount Vernon Machine & Motor Company, Mount Vernon, Ill., has been incorporated with a capital stock of $5000 by D. P. Settlemire, Logan E. Mayfield and Robert C. Smith.

The Apollo Metal Works, La Salle, Ill., has been incorporated with a capital stock of $20,000 to manufacture novelties and plate metal. The incorporators are Henry P. Schuessler, Adolf Hissen and Harry O. Schuessler.

The Ideal Mfg. Company, Macomb, Ill., has been incorporated with a capital stock of $100,000 by J. Ross Melvin, and others, to manufacture cutlery, etc.

The Hart Mfg. Company, Springfield, Ill., has been incorporated with a capital stock of $50,000 by John E. Hart, Charles R. Van Winkle and F. D. Silloway to manufacture power and other equipment, etc.

The Bush Foundry & Metal Wheel Company, Quincy, Ill., has been incorporated with a capital stock of $40,000 by Thomas L. Tushaus, Arnold Scott and Alfred Kimlin.

The Curtis Milling Company, Alto Pass, Ill., has been incorporated with a capital stock of $25,000 by H. C., E. C. and H. C. Curtis, Jr.

The Elizabeth Light & Power Company, Elizabeth, Ill., has been incorporated with a capital stock of $16,000 by

Bernhard Dittmar, N. A. Gault, A. L. Cox, John Haggie, Frank Fracer, J. C. McKenzie and S. B. Reynolds. It will equip an electric light and power company for public service.

Norris Brothers, Robinson, Ill., manufacturers of oil well supplies, have suffered a $10,000 loss by fire. Their shop was burned to the ground and heavy machinery, consisting of lathes, drills, shapers, as well as general shop equipment, were irreparably damaged.

The Interstate Mfg. Company, Oskaloosa, Iowa, will move to Des Moines. The company, which builds heating and ventilating plants, will build a factory to be equipped with sheet metal working machinery.

The Louden Machinery Company, Fairfield, Iowa, has been incorporated with a capital stock of $750,000. It has been manufacturing barn equipment for twenty years as a co-partnership.

H. B. Ransom, town clerk, Colo, Iowa, will receive bids until May 24 for deep well pumps, etc.

Onslow, Iowa, will receive bids until 8 p.m. May 25 for a waterworks plant, including a pump and engine. Charles P. Chase, Clinton, Iowa, is the consulting engineer.

Ceresco, Neb., will receive bids until 2 p.m. May 24 for lighting plants. Grant & Fulton, Lincoln, Neb., are the engineers.

The Home Electric & Heating Company, Eveleth, Minn., has decided on improvements to its electric service and extension to its heating service. It will issue about $75,000 in bonds to cover these improvements.

It is reported that the Washburn-Crosby Company, Chamber of Commerce Building, Minneapolis, Minn., has awarded the contract to the John Wunder Company, Lumber Exchange Building, Minneapolis, for the construction of a two-story addition to its machine shop, at First street and Sixth avenue, South. It will be of brick and reinforced concrete and will cost about $8000.

The Missouri Pacific Railroad will erect new buildings and install additional equipment in its repair and machine shops at Pueblo, Colo.

Cleveland

CLEVELAND, OHIO, May 17, 1915.

The demand for lathes appears almost unlimited, so that the problem with dealers and builders is not to get orders, but to be able to supply machines within the time wanted. Deliveries on lathes, except in the large sizes, are now being promised in from six weeks to four months. Additional purchases made in Dayton to fill war orders include 160 machines placed by one company with a Cleveland dealer, lathes predominating, on which all deliveries are to be made by August 1. A new Ohio inquiry is for forty lathes. Sales by local dealers last week include quite a number of lathes somewhat out of date, owing to the fact that they have been replaced by newer models. These machines will go abroad. The demand for automatic machinery, both domestic and foreign, continues heavy. Conditions are such at present that ocean shipments are being delayed considerably. While the bulk of machinery that is being purchased is for war material, a fair demand is from the automobile trade. Much of the inquiry from this source is for presses, and some of the makers are unable to promise early delivery on the larger sizes.

A plant for the manufacture of white metal sheets will be established in Cleveland by the Cleveland White Metal Company, which has been incorporated with a capital stock of $250,000. The company plans to install rolling mills for rolling white metal into sheets and will also furnish the metal in ingot form. The plant will probably be located on a site in the eastern part of the city along the Belt Line Railroad. George Huberty is president; J. A. Bailey, secretary, and John J. Adler, general manager.

The Osborn Engineering Company, Cleveland, is preparing plans for a factory to be erected by the B. F. Goodrich Company, Akron, Ohio.

The American Ship Building Company, Cleveland, has applied for permits for a two-story brick and concrete pattern shop and storage building and a building for a foundry and machine shop, which will be 120 x 280 ft.

W. T. Anglemeyer and A. E. Lockwood, Dayton, and John Lust, Troy, have purchased the plant of the Troy Foundry Company, Troy, Ohio, from the receiver. A new foundry building will be erected to replace that recently damaged by fire.

The Timken Roller Bearing Company, Canton, Ohio, announces that extensions to cost about $300,000 will be made to its Detroit plant, the Timken Detroit Axle Company. The principal addition will be an extension to the drop forge shop.

The American Steel Tube Company, Toledo, Ohio, has been incorporated with a capital stock of $1000 by J. E. Caulfiel, P. A. Dischinger, and others.

The Piqua Machine & Boiler Company, Piqua, Ohio, recently incorporated to do a general repair business and to manufacture machinery, has elected Otto A. Simon, president and treasurer; J. Frank O'Brien, general manager; C. H. Herwig, vice-president, and Forrest C. Simon, secretary.

It is announced that the O. C. Barber Mining & Fertilizing Company, North Industry, Ohio, will build a main factory building, 70 x 700 ft., a machine shop 42 x 95 ft., and other smaller structures. Machine shop and power-house equipment will be purchased.

Detroit

DETROIT, MICH., May 17, 1915.

War orders continue to be responsible for an increase in manufacturing operations in this city, although indications are not lacking that purely domestic business is improving also. Buying of machine tools in satisfactory volume is reported by local merchants and this activity is not confined to sales of new machines, but has spread to second-hand tools. Stocks of more than ordinary size of second-hand machinery had accumulated the past several months and the awakening of the demand for this class of equipment was very welcome. Manufacturers of automobiles and accessories are all well engaged and this industry is in a very healthy condition. The street railway strike which continued for one and one-half days last week had some effect on local industries and some few plants closed for the week end, but the majority of the large plants continued to operate, the men being carried to and from work in motor trucks. Building operations are not of a character interesting to the machinery trade and conditions are somewhat more quiet than the general industrial situation would seem to warrant.

The Morgan Electric Company will establish a plant in Detroit and make this city its headquarters. A factory site has been secured and in addition a large garage and service station will be maintained. The company manufactures self starters for automobiles and plans an annual production of 50,000 starters. Charles L. Morgan is president.

The Twentieth Century Metallic Packing Company, Detroit, has been incorporated with a capital stock of $500,000. It proposes to manufacture and repair machinery and T. G. Saxon, Lexington, Ky.; E. J. Welch, Detroit, and R. C. Welch, Chicago, are named as incorporators.

The Detroit Stamping Company, Detroit, has been incorporated with $10,000 capital stock to manufacture dies and sheet metal stampings. W. H. Roberts, Fred Haskel and Earl W. Roberts are the incorporators.

The New Standard Foundry Company, Detroit, has increased its capital stock from $50,000 to $100,000.

The D. A. C. Garage, Detroit, has been incorporated to establish a garage and machine shop by John H. Thompson, John Kelsey and W. E. Metzger. The company is capitalized at $30,000.

The American Top Company, Jackson, Mich., manufacturer of automobile tops, has acquired additional factory space and is adding to its equipment.

It is reported from Flint, Mich., that the Dort Automobile Company is preparing to enlarge its plant materially and to increase its equipment.

The Continental Motor Mfg. Company, Detroit, Mich., is making an addition to its plant at Muskegon, to take care of its automatic screw machine work. It desires to hear from manufacturers in regard to the latest devices for equipping such a building.

The Buick Motor Company, Flint, Mich., will build a two-and-a-half story addition to its factory.

The M. P. M. Motor Company, Mt. Pleasant, Mich., will probably erect an addition to its plant.

The new factory of the Madison Mfg. Company, Muskegon, Mich., 40 x 80 ft., of brick and concrete construction, is nearing completion. It will cost about $2500.

The Cadillac Cabinet & Construction Company, Cadillac, Mich., will add to its lines the manufacture of washing machines.

The mill of the Standard Hoop Company, Bay City, Mich., has resumed operation recently.

The Detroit Automatic Door Opener Company, Detroit, Mich., has been incorporated with a capital stock of $2000, by Albert Russell, Albert Ives, Henry Holland and others.

The Port Huron Engine & Thresher Company, Port Huron, Mich., has approved plans for its new plant, which will consist of an office, machine shop, forge shop, casting storage house, engine erecting and testing shop, boiler shop, paint

shop, test house, wood shop, tin shop, stores shop, foundry and pattern storage house, etc.

Louis I. Carrier is remodeling the plant of the Lake Side Foundry Company, foot of Lycaste avenue, Detroit.

The United States Pressed Steel Company, Ypsilanti, Mich., has decided to enlarge its plant, for the manufacture of steel whiffletrees, seats, tool boxes and general stampings.

The Hartford Light & Power Company succeeds to the business of Anderson Brothers, Hartford, Mich. The new company has made plans to install new machinery.

The Michigan Sugar Company, Alma, Mich., will spend about $15,000 in repairs to its plant.

The Automatic Balanced Valve Company, Detroit, Mich., has been incorporated with a capital stock of $100,000. Clarence Blakeley, Frank T. Lodge and William R. Brown are the incorporators.

The Byers Brothers Construction Company, Kalamazoo, has been awarded the contract for the erection of a factory for the Rudy Furnace Company, Dowagiac. It will be of concrete and brick construction.

The National Spring & Wire Company, Albion, Mich., is having plans prepared for a factory, 48 x 100 ft.

Indianapolis

INDIANAPOLIS, IND., May 17, 1915.

The Kloeb Gas Stove & Heater Company, Marion, Ind., has been incorporated with $10,000 capital stock to manufacture stoves and heaters. The directors are Joseph A. Kloeb, Henry and F. A. Berger.

The North Liberty Water Company, North Liberty, Ind., has been incorporated with $14,000 capital stock to supply water. J. F. Price, J. A. Hostetter and G. O. Harrup are the directors.

The Sheldon Tile Company, Sheldon, Ind., has been incorporated with $20,000 capital stock to manufacture tile products. The directors are F. W. Freese, A. J. Niereiter and F. E. Stouder.

An overhead electric railway, two movable elevators, etc., are to be built at the plant of the American Window Glass Company, Hartford City, Ind. The improvements will cost about $100,000.

The Union Heat, Light & Power Company, Winchester, Ind., has increased its capital stock by an issue of $60,000, to be used mainly in the purchase of the gas plant at Portland, Ind.

The White-Smith Mfg. Company, Newcastle, Ind., has been incorporated with $50,000 capital stock to manufacture vacuum cleaners and other specialties. The directors are E. T. White, J. E. and H. L. Smith.

The American Molding Machine Company, Terre Haute, Ind., has been incorporated by L. J. Cox, W. C. Norcross and W. C. Ely, with $20,000 capital stock, to manufacture machinery.

The Hill Standard Mfg. Company, Anderson, Ind., manufacturer of children's vehicles, is preparing to begin the manufacture of electric motorcycles, to be propelled by small electric motors. Hugh Hill, president of the company, says the plan is to produce 20,000 a year.

Fire destroyed the plant of the Banta & Bender Refrigerator Company, Ligonier, Ind., May 15, with $40,000 loss.

The Leavenworth Electric Light Company, Leavenworth, Ind., has been incorporated with $2000 capital to supply electricity. The directors are F. W. Kirsch, J. B. Maher and A. E. Stewart.

The Mihok Mfg. Company, Gary, Ind., has been incorporated by E. W. Mihok, Peter Honorof and Steven Szalko, with $25,000 capital stock, to manufacture hand shovels and similar implements.

The East Gary Automatic Desk Company, East Gary, Ind., has increased its capital stock from $55,000 to $100,000.

The Anderson Trust Company has been appointed receiver for the Elwood Iron Works, Elwood, Ind.

The Galveston Light & Power Company, Galveston, Ind., has been incorporated with $10,000 capital stock to supply light and power. The directors are C. W. McReynolds, W. H. Arnold and W. H. Arnett.

The National Factories, Richmond, Ind., has been incorporated with $10,000 capital stock to manufacture automatic oilers. J. E. Jones, R. E. Jones and W. R. Stevens are the directors.

The George T. Smith Company, South Bend, Ind., has been incorporated with a capital stock of $300,000 to manufacture machinery. The incorporators are George T. and Frank M. Smith and Jeptha B. Sikes.

The Flow-Glass Bottle Machine Company, Evansville, Ind., has been organized by L. E. Seddon, K. M. Thompson and H. A. Van Dyek to manufacture and sell machinery for the manufacture of glassware. The company has a capital of $100,000.

E. Wiley, J. F. Kingsley and Ratio Wiley have opened a repair and machine shop at 314 West Third street, Marion, Ind.

Milwaukee

MILWAUKEE, WIS., May 17, 1915.

Operations on war orders continue to form the principal activity in Milwaukee, although it is generally admitted that domestic business is showing improvement. It is believed that the action to stop the manufacture of ammunition in this and other Milwaukee plants will come to nothing and thus far has shown no effect. Tool builders are filling large foreign orders and in some instances it is found difficult to fill domestic orders promptly. This is not the rule, however. Automobile plants are the best buyers of tools at this time and some business is being done with railroads, although the demand from this source is expected to assume larger proportions in the near future.

The Allis-Chalmers Mfg. Company, Milwaukee, has awarded the general contract for designing and erecting a pattern shop and storage building, and a brass foundry to Klug & Smith, engineers, Milwaukee. According to L. F. Bower, vice-president, the extensions are not required by the company's war business on Bethlehem Steel Company account, but by a continuation of the policy of concentrating production at the main works in West Allis and the abandonment of branch works in Chicago and Scranton, Pa. The pattern building will be 90 x 120 ft., five stories, and the brass foundry 85 x 200 ft., one story, of brick and steel. The old brass foundry will be used as an auxiliary pattern storehouse.

The Wisconsin Metal Products Company, Racine, Wis., recently incorporated, succeeds the Advance Mfg. Company, manufacturer of hardware specialties. It has elected the following officers: David G. Janes, president; A. R. Janes, vice-president; Taylor Jelliffe, secretary and treasurer. It will manufacture currycombs and other metal hardware specialties, and will do a general contract business in metal stamping, deep drawing and die making, for which it has the latest type of equipment.

The Kissel Motor Car Company, Hartford, Wis., which has been operating with extra forces and on overtime schedules on export orders for trucks, has booked an order for 30 ambulance trucks for the Government of Serbia. The company furnished the Serbian Government with 12 trucks last fall and the order is in the nature of a repeater.

The Garage Equipment Mfg. Company, 742 South Pierce street, Milwaukee, originally incorporated as the Garame Equipment Company, has made a second change of corporate style, and will henceforth be called the Gemco Mfg. Company. The change is made to conform with the company's trademark, Gemco. Grant F. Discher is president and general manager.

The Lemke Electric Company, 280-282 Lake street, Milwaukee, manufacturer of electrical goods and service station for numerous electrical ignition, starting and lighting apparatus manufacturers, has moved to new and larger quarters at 509-511 Cedar street.

The Federal Pressed Steel Company, Milwaukee, which is building an addition to cost $10,000, principally to take care of an order totalling $1,500,000 for shrapnel shells for the Russian Government, has awarded a contract for $7000 worth of electrical equipment to the O. C. Uihlein Electrical Company, 460 Broadway, Milwaukee. The contract includes 76 2-hp. motors.

The Tiger Drill Mfg. Company, Beaver Dam, Wis., manufacturer of farm implements, has been placed in charge of Charles C. Miller, as receiver. The company executed a trust deed some time ago and the more recent action is principally to determine the rights of the trustee.

The Whitewater Machine Company, Whitewater, Wis., has been purchased from Frederick W. Krapplin by Joseph Dunham. Mr. Krapplin established the business about 40 years ago and will retire.

The Modern Pattern Company, Milwaukee, has been incorporated with $2500 capital by George Kolhardt, Clarence Romiller and Paul R. Newcomb to manufacture patterns and molds. All of the incorporators are well known in the local foundry trade.

The Alex G. Goethel Sheet Metal Works has moved from 90 Second street to its factory at 818-820 Winnebago street.

It is a builder of dust-collecting, ventilating and blower systems.

The Automatic Cradle Company, Stevens Point, Wis., has purchased a 60-hp. Muncie oil engine at $3300 to supplant purchased current for factory drive, and is making other improvements.

The Arhelger Truck Company, 221 Seventh street, Milwaukee, has started a production of steel trailer trucks of 1000 to 1500 lb. capacity.

The long-delayed addition to the Manitowoc foundry of the Aluminum Castings Company, Cleveland, Ohio, is to be made during this summer, according to unofficial reports. Three years ago the company projected the improvement, but deferred it because of labor troubles and the state of business. The Manitowoc plant is now working night and day, principally on automobile engine castings, and the need of additional room is imperative.

The plant of the South Side Machine Works, Clintonville, Wis., including a new garage addition recently erected, was damaged by fire last week with a loss of $13,000. The plant will be rebuilt at once.

Elmer Hall, Hartford, Wis., has perfected a new type of ignition system for internal combustion engines, known as the automatic make-and-break sparker and plans are under way for its manufacture in Hartford.

A report comes from Corliss, Wis., that the plant of the defunct Wisconsin Engine Company is being inspected by representatives of several concerns which intend to purchase or lease the property. It has been idle about two years and is equipped to manufacture heavy machinery.

Green Bay (Wis.) capital, represented by Sylvester Duquaine, has taken over the Clinton Paper Mills, Clinton, Iowa, for $50,000, and will continue operations with Oscar Klein, of Green Bay, as manager.

John Steiner, Chilton, Wis., has purchased the plant of the Steiner Mfg. Company, which is moving its gasoline engine works from Chilton to Plymouth, Wis. Mr. Steiner will conduct a general machine shop.

L. E. Daniels and E. Forsberg, Chicago, have established a general machine shop at Lodi, Wis.

C. D. Driver, Racine, Wis., has started a considerable production of an all-steel drill rack for machine shops and garages.

The Frost Mfg. Company, Kenosha, Wis., manufacturing plumbers' and steamfitters' goods and materials, has engaged in the manufacture of carburetors for gasoline motors.

The Foltz Engineering Company, St. Paul, Minn., has been commissioned to prepare plans for a grain elevator for the Chicago & Northwestern Railway at Milwaukee. W. W. Finley, 226 West Jackson boulevard, Chicago, is chief engineer. It will have a capacity of 2,500,000 bu.

Horace P. Yale, 3011 State street, Milwaukee, who has conducted a general machinery, belting and supply business under the style of H. P. Yale & Co., 99 West Water street, Milwaukee, for many years, has disposed of his stock and business to the Badger-Packard Machinery Company, 76 West Water street, Milwaukee, and will retire from active business.

The Badger Lumber & Mfg. Company, Oshkosh, Wis., recently incorporated, will succeed to the business of the Campbell-Cameron Company, manufacturer of boxes.

Cincinnati

CINCINNATI, OHIO, May 17, 1915.

A prominent local machine tool builder who is particularly well informed as to the general situation states that domestic users of machine tools should be urged to place their orders as far ahead as possible. Stocks of standard tools, both new and second-hand, have been wiped out, and many firms have orders in hand that will keep them running at full tilt several weeks, and in some cases several months in advance. All manufacturers who are participating in the almost unprecedented foreign business that is still coming in are doing their best to protect domestic customers, and in many instances are diverting shipments that were boxed for export; but should the domestic demand assume normal proportions at any time soon exasperating delays are bound to occur. The same manufacturer quoted is also authority for the statement that only a comparatively small number of American users of machine tools are making war munitions, and that the general trade will be heard from at no distant date, as purchases have been postponed about as long as seems possible in many cases. Railroad requirements also constitute a factor in the situation that may come up at any time.

All of the local jobbing machine shops are very busy. Many of them have more work than they can get out promptly, which is a situation exactly the reverse of last year's record at this time. The jobbing foundries report a slight let-up; but those making a specialty of machine tool castings are still busy. The stove foundries are very dull. An improvement is noted in wood-working machinery, and makers of portable electric drilling machines continue their optimistic reports both as to business in sight and that already booked.

It is currently reported that manufacturers in Springfield, Ohio, have obtained a number of sub-contracts for finishing shrapnel cases from Dayton firms, who hold original contracts. If this information is correct these companies will be compelled to add to their shop equipment.

The Universal Metal Post Company, Cincinnati, has been incorporated with $5000 capital stock to market a patented metal fence post. As arrangements have been made to manufacture this post under contract, no machinery of any kind will be required. L. K. Slaback and George G. McGlaughlin are the principal incorporators.

The Cincinnati Car Company, Winton place, Cincinnati, is in the market for a large toggle press to be used for stamping purposes.

The Cincinnati Chamber of Commerce announces that the William Koehl Company, Jamestown, N. Y., manufacturer of druggists' boxes and other specialties, will remove its plant to Cincinnati at an early date. It will put up a building on Hurlburt street that will be approximately 90 x 100 ft., four stories, of reinforced concrete.

The Dayton Power & Light Company, Dayton, Ohio, has placed an order with the General Electric Company for one 7500-kw. generator to be direct connected to a steam turbine.

The Thomas Automatic Fire Engine Company, Columbus, Ohio, has been incorporated with $100,000 capital stock by J. A. Thomas and others. It plans to erect a plant for the manufacture of fire-fighting apparatus.

Plans are under way for converting the factory of the Columbus Buggy Company, Columbus, Ohio, into a plant to house light manufacturing.

A. Butler & Sons Company, Toledo, Ohio, has been awarded contract for the construction of an addition to the plant of the Dayton Engineering Laboratories Company, Dayton, Ohio, recently mentioned as contemplated.

The Steel Transfer Case Company, Springfield, Ohio, has been incorporated with $10,000 capital stock to manufacture transfer cases and other metal specialties. Justin Altschul is named among the incorporators.

The J. E. Wells Company, Sidney, Ohio, recently incorporated with $15,000 capital stock, will erect a small grain elevator.

The Wilmington Casting Company, Wilmington, Ohio, has been incorporated with $30,000 capital stock, and has commenced work on a foundry building. The incorporators are Joseph W. Early, J. D. Boone, D. M. Horton, P. S. Horton and E. R. Bales.

The Troy Mfg Company, Troy, Ohio, is building a three-story addition to its plant that will be used for building automobile bodies. Nothing is known as to machinery requirements.

The Central South

LOUISVILLE, KY., May 17, 1915.

Business continues to show improvement in this territory, and manufacturers are apparently not worrying over the German situation. Industrial activity is greater than it has been for some time, so that power equipment concerns are not being compelled to depend to such a large extent on public service plants for their business. The installation of equipment which has been in contemplation for some time has in a good many cases been ordered, as the purchasers have come to the conclusion that prospects for the future justify the additional expenditures. Power machinery continues to lead in volume; but special machinery in various lines is also showing more life.

The Forman-Breen Mfg. Company, 1122 Rowan street, Louisville, has purchased a building at Preston and St. Catherine streets, and will move its plant, enlarging 50 per cent. and adding electric power and special machinery. The company makes saddlery and harness.

The Louisville Bridge & Iron Company has given a contract to the James Clark, Jr., Electric Company, Louisville, for the alternating current motors which will be installed in its plant in place of direct current equipment. Changes in the pneumatic equipment will also be made.

The Columbia Sanitary Mfg. Company, Eighteenth street and Magnolia avenue, which is completing the erection of its new plant, is to buy seven motors with an aggregate of 135 hp.

The Continental Car Company has been incorporated with $10,000 capitalization by A. B. McKinley and others. It will take over and operate the plant of the Continental Car & Equipment Company, Highland Park, Ky., which recently failed.

The Medanich Motors Company, Louisville, has been incorporated to manufacture gasoline engines. No details are available. Daniel B. Medanich is the principal stockholder.

J. R. White, L. W. Preston and Ed H. Smith, Glasgow, Ky., have purchased an electric light plant and ice factory at Tompkinsville, Ky., and will add equipment for a waterworks.

The Starkey Electric Company, Somerset, Ky., has been awarded a franchise for the operation of an electric light plant at Whitesburg, Ky., and is now ready to buy equipment.

The Robertson County Light & Power Company, Mt. Olivet, Ky., will install a plant with a capacity of 60 hp. Prices on equipment are now being secured.

The Lancaster, Ky., Electric Light Company plans to enlarge its plant for 24-hr. service. Alexander Walker is in charge.

Humboldt, Tenn., is now taking bids for a motor-driven centrifugal pump. W. M. Case is superintendent.

Mills & Lupton, 1146 Market street, Chattanooga, Tenn., will purchase a 150-hp. alternating-current, 220-volt, three-phase, 60-cycle motor, and a belt-driven air compressor with a capacity of 900 cu. ft.

Gleason, Tenn., will equip an electric light plant with the proceeds of a $10,000 bond issue which has just been authorized.

Milan, Tenn., will install additional equipment in its electric light plant and improve its water system. It has authorized $12,000 of bonds.

The Andres Stone & Marble Company, Milwaukee, Wis., will begin the construction of a marble mill at Knoxville, Tenn. The equipment has not yet been purchased.

Lockwood & Co., Memphis, Tenn., will build a garage, including a repair shop.

The Fulton Company, Knoxville, Tenn., is contemplating the installation of a gas-producer plant of the naptha type.

St. Louis

ST. LOUIS, MO., May 17, 1915.

The reports coming in from the South are gratifyingly optimistic, but they all relate to rather distant periods. Immediate business shows only the most gradual gain. Inquiries for new tools continue limited in number, both for new enterprises and for expansion. Second-hand tools are moving slowly. Collections are reported good. Bank reserves are still reported as piling up in the territory served by St. Louis much beyond even the prospective needs of the coming crop movement. Credit is still being rather cautiously extended and as a matter of course investment of permanent or semi-permanent character is withheld and postponed.

The Stanley Motor Company, St. Louis, Mo., has increased its capital stock from $10,000 to $25,000 and will enlarge its repair plant and garage.

The Holekamp Lumber Company, Webster Groves station, St. Louis, Mo., has increased its capital stock from $40,000 to $75,000 and will increase its planing-mill equipment.

The Steinlage Sanitary Milk Company, St. Louis, Mo., will erect a plant and install refrigerating machinery and a power plant.

The International Package Company, St. Louis, Mo., has been incorporated with a capital stock of $10,000 by A. J. Fitzsimmons, U. R. Till and F. Edward O'Neil.

Machinery for removing fiber from vegetable growth is being sought by Charles R. Fife, Central National Bank Building, St. Louis, in connection with a plant he proposes to equip.

The Inland Machine Works Company, St. Louis, Mo., has increased its capital stock from $8000 to $30,000 for the purpose of extending its operations.

The Kansas City Auto Parts Company, Kansas City, Mo., has been incorporated with a capital stock of $200,000 by Gustav V. and Otto H. Nelson and Carl E. Kimpton to manufacture automobile motors, etc.

The National Paving Company, Kansas City, Mo., has been incorporated with a capital stock of $50,000 by A. E. Davison, Robert E. Reid and H. D. Bell.

The Scientific Laboratories Company, Kansas City, Mo., has been incorporated with a capital stock of $12,000 by L. Anton Smith, C. H. Alexander and A. C. Alexander.

The Missouri & Kansas Steel Tank & Mfg. Company, St. Joseph, Mo., has been incorporated with a capital stock of $16,000 by E. F. Yale, J. H. Downs and F. A. Thompson.

Higginsville, Mo., will install one 250-kw. generating unit complete, for electric light and power. D. Riepe is superintendent.

The Ford Motor Company, Detroit, Mich., will double the present capacity of its plant at Kansas City, Mo., at a cost of about $350,000.

Lee's Summit, Mo., is having revised plans prepared by Henrici, Kent & Lowry, Kansas City, Mo., for a waterworks plant estimated to cost about $30,000. Bids will be taken soon.

W. W. Winters, Plainview, Ark., has been granted a franchise and will equip an electric light plant.

An electric light plant will be equipped at Success, Ark., by George Booser, Corning, Ark., who has been granted a franchise.

The Standard Brake Shoe & Foundry Company, Pine Bluff, Ark., will take over the iron and brass foundry business of the Dilley Foundry Company, Pine Bluff. The new company is now building a plant which it will equip with the Dilley Company's machinery. It plans to install a small open-hearth steel casting plant within the next few months. Other equipment has been purchased. The new plant will cost about $40,000. F. L. Dilley is manager.

Harry Chalmers and Arthur Chalmers, Amsterdam, N. Y., and others, have incorporated four companies to equip pearl button manufacturing plants at Black Rock, Devall Bluff, Clarendon and Newport, Ark. They are in the market for equipment.

The Central Auto Company, Little Rock, Ark., has been incorporated with a capital stock of $10,000 by H. E. and G. M. Thom and Justin and C. M. Matthews.

Morris M. Cohn, Little Rock, Ark., will build and equip a garage.

Benton, Ark., has plans for the installation of a sewer system and disposal plant and a waterworks plant, all to cost $100,000. The mayor should be addressed.

The Myers Stave Mfg. Company, Piggott, Ark., has increased its capital stock from $25,000 to $50,000 and will add to its mechanical equipment to increase its output.

The Baxter Stave Company, Grays, Ark., R. F. D. Jelks, has been incorporated with a capital stock of $17,500 by L. V. and J. E. Baxter and George T. McCoppin.

The Adamson Light & Power Company, Adamson, Okla., will install at once about $3000 of equipment. Frank Mann is engineer in charge of the construction.

The Cushing Public Service Company, Cushing, Okla., will expend about $20,000 on equipment for the plant of the Cushing Electric Light & Power Company, which it has acquired. H. Askin is in charge.

The Jennings Electric Company, Jennings, Okla., has been incorporated with a capital stock of $15,000 by Robert B. Montgomery, D. Gaylord Powell and Harry A. Koll.

The Guymon Electric Light & Power Company, Guymon, Okla., will equip an ice-making plant.

The Automatic Gas Tank Company, Tulsa, Okla., has been incorporated with a capital stock of $50,000 by F. M. Ephland, N. O. Bird and W. A. Weir.

Beggs, Okla., will expend about $35,000 on a sewer system, disposal plant, and a waterworks plant.

The Shepherd-Jenkins Lumber Company, Estill, Miss., will install a circular mill. H. A. Hoover, McCormick Building, Chicago, is president.

W. A. Davenport, Alberta, La., and J. R. Mitchell are completing plans for the rebuilding of the Bienville Lumber Company, recently burned. The new plant will have 115,000 ft. per day capacity.

T. O. Slaughter, Waynesboro, Miss., will install woodworking equipment for the manufacture of picture frames.

Texas

AUSTIN, TEXAS, May 15, 1915.

Several of the companies that have brought in wells in the new Thrall field are installing pumping plants. Quite a demand for this character of equipment has developed in the other oil fields of the State. One of the interesting features of the machinery trade is that the plans for many of the modern buildings that are being erected in the larger cities of Texas call for complete heating, lighting, ventilation and water supply equipment. This is also true of many of the residences. It marks a new departure in building operations in this State.

The Gulf, Colorado & Santa Fé Railway has appropriated $7771 for the purchase of additional machinery for its shops at Cleburne and $2477 for additional machinery for its shops at Galveston. F. G. Pettibone, Galveston, is general manager.

The City Council, San Antonio, has granted a franchise to the San Antonio Belt & Terminal Railway Company to build terminals, stations, etc., in San Antonio. The company is a subsidiary of the Missouri, Kansas & Texas Railway Company, and according to the agreement with the city, it will expend not less than $1,200,000 in the construction of terminals at that place.

The Malone Light & Power Company, Plainview, plans to install an electric lighting system at Slaton.

The Rockwall Ice Company, Rockwall, has been organized to build an ice plant. F. H. Doran is one of the principals.

The Chamber of Commerce, El Paso, is negotiating with a syndicate of California men for the construction of a large beet sugar refinery. The proposed plant will give employment to about 1200 men. A mill for the manufacture of raw beet sugar will be operated in connection with it.

The Bricklayers' International Union is erecting a brick and tile manufacturing plant at El Paso at a cost of $360,000, which sum has been appropriated out of the treasury of the organization for that purpose. The new industry will give employment to about 250 men.

The electric light plant and ice factory of the Del Rio Electric Light & Ice Company, Del Rio, has been purchased by the Texas Southern Electric Company for $90,000. It is announced that improvements will be made to the property.

The Harris-Trice Mfg. Company, Timpson, has been organized to manufacture handles. A sawmill will be operated in connection with the enterprise.

The City Council, Timpson, has employed an engineer to superintend the construction of a waterworks system for which $17,000 has been voted.

The Waco Schaffer Company, Waco, has been organized with a capital stock of $200,000 to manufacture an automobile engine.

The Lone Star Gas Company, of Ft. Worth, has advised the city commission of Dallas that it will soon begin the construction of a duplicate natural gas main from the Petrolia gas fields to Dallas. The proposed improvement will cost approximately $500,000.

H. R. White and Lyle Marshall, Nashville, Tenn., plan to build a plant at Dallas for manufacturing steel wire springs at a cost of about $25,000.

W. T. Moody, Potosi, plans to build a cotton gin at Abilene.

The Red River & Gulf Terminal Railway Company has been organized with principal offices at Longview for the purpose of constructing a railroad from Ore City, Texas, to a point on the Red River, about 75 miles. G. A. Bodenheim, Longview, and others, are the incorporators. It is an Atchison, Topeka & Santa Fé project.

The Pacific Northwest

SEATTLE, WASH., May 11, 1915.

Local machinery men report a gradual increase in business, both in inquiries and orders placed. Several good-sized orders have been obtained the past week for hydroelectric machinery and power plant equipment to be used in installation of small plants in eastern Washington. Orders for small groups of machine tools for automobile and general repair shops, and for mills and mines in the more isolated districts, are gradually increasing, although many such inquiries are satisfied with second-hand tools. Buying on the part of larger shops is mostly of single tools, and those for replacement.

The general situation shows continued improvement: the scale of operations in most industries is increasing, and more interest is taken in new projects, with better prospects for successful financing than for over a year past. The crop outlook is excellent, and another year of high grain prices would bring great prosperity to the agricultural sections. Lumber industry remains inactive, although a slight improvement is being felt. A number of plants have re-opened the past week, and many others are now making repairs and extensions preparatory to starting operations. A rather brisk demand is felt for grain elevator machinery and for flour milling machinery.

Johnson & Bailey, Pilot Rock, Ore., are installing a small machine shop.

The West Virginia Mining Company, Surprise, Wash., is preparing to install a 200-hp. compressor and a large Diesel type engine and electric hoist.

The Klamath Meat Company, Klamath Falls, Ore., has started construction on a meat-packing plant.

The Weyerhaeuser Timber Company has authorized the immediate construction of an addition to its sawmill just completed at Everett, Wash., the capacity being increased by 100,000 ft. per day.

The Clark & Wilson Lumber Company, Linnton, Ore., is building a new storage shed, which will be equipped with a 5-ton Brown hoist, monorail trolley system, and an 80-ft. transfer crane, orders for which have been placed with the Colby Engineering Company, Portland.

The Fairmount Tile & Brick Company, Monroe, Ore., will extend and increase its plant. New machinery will be required.

The Yakima Fruit Products Company, North Yakima, Wash., recently organized, has voted to increase its capital stock from $50,000 to $100,000, and will construct a cannery of 1000 cases a day capacity.

The Morton Electric Company, Morton, Wash., owned by F. M. Broadbent, has been sold to C. O. Smith, Pe Ell, Wash., who plans improvements.

A small electric lighting plant will be installed at the State Agricultural College, Moscow, Idaho.

G. A. Collins, Seattle, has been granted an electric light and power franchise by the commissioners of Kings County, and he has organized a company to erect a power plant estimated to cost about $20,000.

Plans for a reinforced concrete addition, 100 x 200 ft., to the mill of the Settlers Box Company, Portland, have been prepared by Whitehouse & Fouilhoux, architects. The structure will be three stories and basement, and will cost about $45,000.

The Mondamin Mining Company, Philipsburg, Mont., of which D. T. Conklin is president, will soon complete arrangements for equipping its plant with an electric hoist, air compressors and power drills.

The Nelson Mfg. Company, North Yakima, Wash., has been incorporated by F. Fridolf and John Nelson with a capital stock of $15,000. It will construct a plant for the manufacture of fruit-sizing machinery.

According to authentic report option has been taken for the purchase of the plant of the Simplex Bed Mfg. Company, Kent, Wash., which has been in the hands of receivers for more than a year, will be taken over by San Francisco business men. If the option is exercised, the plant will be completely overhauled.

The Riverview Mill Company, Everett, Wash., has been incorporated for $10,000 by M. C. Engles, S. D. Ledford and B. S. Stevens.

The Motor Appliance Company, Seattle, has been incorporated for $50,000 by R. O. Ring, Frederick Berg, and others.

Eastern Canada

TORONTO, ONT., May 17, 1915.

The preliminary report of the foreign trade of Canada for the fiscal year ended March 31, has just been issued. Its most significant feature is the increase it shows in the exports of merchandise, the total of which was $461,442,509, compared with $455,437,224 last year and $377,068,355 in 1913. The increase in the exports of manufactured goods was particularly marked, the total being $85,539,501, a gain of nearly 50 per cent. over 1914 and of nearly 100 per cent. over 1913. As the imports of merchandise fell to $455,371,371, a favorable trade balance exists of over $6,000,000—a marked change from the experience of previous years.

The Canadian Stamping Company, Ltd., Walkerville, Ont., is breaking ground for a new forging plant 600 ft. long. It will be equipped with the most modern machinery and appliances.

The James Morrison Brass Mfg. Company, Ltd., Toronto, is to erect a factory 80 by 300 ft., for the manufacture of munitions of war.

Standard Primer & Fuse Company, Ltd., Toronto, has been incorporated with a capital stock of $50,000 to manufacture percussion fuses, detonators, heating and electrical material. Thomas A. Rowan, Norman Somerville, Harry A. Newman, Victor H. Hattin and F. G. Waters, all of Toronto, are the incorporators.

The Canada Iron Company, Ltd., Guelph, Ont., has been formed to manufacture iron and steel sheets and road-making machinery. The capital stock is $20,000 and the incorporators are Henry B. Sharman, John N. Lyon and Robert W. Gladstone.

Lande's, Ltd., Montreal, has been incorporated with a capital stock of $49,000 to manufacture household, office and factory furniture. The incorporators are Michael J. Morrison, Outremont, Que., and Bernard Rose, Lawrence Tannenbaum and Manuel Levitt.

John L. Wettlaufer, Hugh S. Henry, Arthur Heald, Paul Jockel and H. W. Page, all of Toronto, have been incorp-

orated under the style of the Canadian Drill & Chuck Company, Ltd., to manufacture machinery, tools, etc. The capital stock is $20,000.

The plant of the Rodney Woodenware Company, Rodney, Ont., has been destroyed by fire with a loss of $35,000.

The saw mill of the Gres Falls Company, Three Rivers, Que., was destroyed by fire May 14 with a loss of $100,000.

Wallaceburg, Ont., is to construct a sewage pumping station and an electric transmission line. Tenders close June 1. H. E. Johnson is town clerk.

Tenders for the construction of a complete pumping plant unit at Peterborough, Ont., close May 31. S. R. Armstrong is secretary of the utilities commission.

A transmission line is to be constructed from Shawinigan Falls to Quebec. The Shawinigan Water & Power Company, Power Building, Montreal, is the contractor.

Ridgetown, Blenheim and Thamesville, all Ontario towns, have decided to install hydroelectric systems.

J. A. Berthiaume, Ltd., Ottawa, is the style of a new company formed to manufacture bedsteads, springs, mattresses and furniture. The capital stock is $50,000 and the incorporators are Bernardin Boutet, Dolphis Raymond, Arthur Beaulieu, Richard Berthiaume and Joseph O. Berthiaume.

The Queen City Oil Company, Ltd., Toronto, has been incorporated with a capital stock of $50,000 to manufacture petroleum, salt, chemicals, etc. The incorporators are Briton Osler, George C. Loveys and James B. Taylor.

The lumber mill of R. Smith & Sons, Niagara Falls, Ont., was destroyed by fire May 9 with a loss of $25,000.

The Canadian Salt Company, Ltd., Windsor, Ont., is making an issue of $300,000 first mortgage bonds for the purpose of increasing its chemical plant. E. G. Henderson, Windsor, is president.

The Columbia Handle & Lumber Company, Ltd., London, Ont., has been incorporated with a capital stock of $100,000 to carry on lumber and mill work generally. Frederick G. Rumball, John Stevely and Wesley H. Braddon, all of Toronto, are the incorporators.

Toronto is in the market for a 5,000,000-gal. pump, driven by three-phase induction motor, for the Riverdale pumping station. Tenders close May 25. Mayor T. L. Church is chairman of the board of control.

Burlington, Ont., is to construct a sewage disposal plant at an estimated cost of $150,000. James S. Allen is town clerk.

The Department of Militia has decided to construct a mechanical filtration plant at Niagara-on-the-Lake, Ont. Samuel Hughes, Ottawa, is Minister of Militia.

The Hollinger Mining Company is to install a new hoisting plant at its central mine, Hollinger, Ont. It will have a capacity of 5000 tons daily and will be electrically driven.

Huntsville, Ont., is to install an electric light system. T. M. Cullon is clerk.

The Town Council, St. Marys, Ont., has decided to expend $12,550 for electrical improvements and a gasoline-driven pump unit for the waterworks powerhouse. Thomas M. Clark is clerk.

The Town Council, Unionville, Ont., contemplates the purchase of a gasoline fire engine.

A construction shop is to be erected at St. Malo, Que., by the Transcontinental Railway Commission, Ottawa.

W. F. Robinson's factory at Lambeth, Ont., has been destroyed by fire with a loss of $3500.

Western Canada

WINNIPEG, MAN., May 15, 1915.

Demand for heavy machinery is still quiet, and not enough new work is in sight to make prospects for the immediate future brighter. Business in tools and machinery parts is in fair volume. The various kinds of machinery used for waterworks, lighting plants and other municipal requirements are in fairly good demand, although many municipalities in western Canada are not spending as much money as formerly on improvements, owing to the general financial tightness.

Regina, Sask., is preparing to spend about $75,000 on its waterworks system and about $30,000 on its light and power plant.

The Saskatchewan Broom Manufacturers, Ltd., Regina, Sask., is getting ready to enlarge its plant. Considerable new machinery will be installed.

The Granby Mining & Smelting Company, Ltd., Anyox, B. C., will enlarge its smelter there to a capacity of 4000 tons per day. The company operates at several other points in British Columbia.

The Western Brick Company, Ltd., Winnipeg, recently incorporated, will manufacture brick on a fairly large scale.

The Dominion Government, Department of Public Works, Ottawa, will spend about $500,000 on harbor improvements at Port Arthur and Ft. William, Ont.

The elevator of the Alberta Farmers' Co-operative Elevator Company, Sedgwick, Alberta, burned recently. It had a capacity of 40,000 bu.

The Cameron Lumber Company, Ltd., Victoria, B. C., is enlarging its box factory. Several new machines will be installed.

M. Peterson, secretary of the board of control, Winnipeg, is calling for tenders, until June 5, for one 150-kw. motor generator exciter set.

Government Purchases

WASHINGTON, D. C., May 17, 1915.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, June 1, schedule 8307, for 36 ¼-hp. motors for Newport; schedule 8278, one hole and face chuck grinder, three portable tool post grinders, two bar and chuck work turret lathes, four bar work turret lathes, four sensitive drill presses, miscellaneous rod and bar automatic machines, one ball race grinding machine, one cylindrical grinding machine, one electric riveting machine, two hand and power feed milling machines, two universal milling machines, all for Newport, and one bolt heading and forging machine for Norfolk; until June 8, schedule 8390, for 10 portable electric drills, for Brooklyn.

The lighthouse inspector, Milwaukee, Wis., will receive bids until 2 p. m., June 1, for furnishing two compact marine boilers.

The constructing quartermaster, Ft. Huachuca, Ariz., will receive sealed proposals until 1 p. m., June 9, for furnishing an electric light plant and refrigerating plant, complete.

The acting supervising architect, Washington, D. C., will receive bids until 3 p.m. June 7, for an electric lighting plant for Cape Fear, N. C.

Bids were received by the Bureau of Supplies and Accounts, Navy Department, Washington, May 11, for supplies for the navy yards, as follows:

Schedule 8206, Ordnance

Class 83, Washington—two selective-geared head lathes—Bid 45, $1100, unit; 65, $1174; 82, $1155; 89, $1133; 120, $1174.30.

Class 84, Washington—one universal milling machine—Bid 12, $1549.90; 43, $1844; 65, $1429; 89, $1603; 107, $1600.

Schedule 8207, Ordnance

Class 85, Newport—one 3-ton steam-driven locomotive crane—Bid 2, $3681; 9, $4420; 17, $3400; 39, $3650; 62, $3600; 77, informal; 92, $3060; 123, $5305.

Schedule 8208, Ordnance

Class 86, Washington—two horizontal sand-blast tumbling barrels—Bid 80, $3500; 102, $1848 and $1410; 105, $3450; 124, $4950, informal.

Schedule 8209, Construction and Repair

Class 91, Norfolk—one geared trimming press—Bid 8, $2650; 31, $2625; 42, $1860; 88, $2325, $2475 and $2460; 116, $1630, informal; $1670, informal, and $1730, informal; 120, $2320; 129, $1900; 132, $2250; 141, $2464.

Schedule 8211, Construction and Repair

Class 93, Norfolk—one rotary shear—Bid 120, $975; 122, $2100.

Schedule 8212, Construction and Repair

Class 94, Boston—one combined stake riveter and punching machine—Bid 20, $590 and $639; 55, $555; 82, $385; 88, $582; 89, $540; 97, $608; 116, $705; 119, $590.

The names of the bidders and the numbers under which they are designated in the above list, are as follows:

Bid 2, American Hoist & Derrick Company; 8, E. W. Bliss Company; 9, The Browning Company; 12, Brown & Sharpe Mfg. Company; 17, Brown Hoisting Machinery Company; 20, Bertsch & Co.; 31, Carroll Electric Company; 39, Exeter Machine Works; 42, Ferracute Machine Company; 43, Frevert Machinery Company; 45, E. L. Fraser; 55, Hilles & Jones Company; 62, Industrial Works; 65, Kemp Machinery Company; 77, McMyler Interstate Company; 80, Mott Sand Blast Mfg. Company; 82, Manning, Maxwell & Moore; 88, D. Nast Machinery Company; 89, Niles-Bement-Pond Company; 92, Orton & Steinbrenner Company; 97, Prentiss Tool & Supply Company; 102, Pangborn Corporation; 105, J. W. Paxson Company; 107, Rockford Milling Machine Company; 116, D. H. Stoll Company; 119, Scully Steel & Iron Company; 120, Schwind Machinery Company; 122, H. C. Smith; 123, Slocum, Avram & Slocum, Inc.; 124, W. W. Slye Mfg. Company; 129, Toledo Machine & Tool Company; 132, United Engineering & Foundry Company; 141, Ward & Co.

Trade Publications

Turbine-Driven Pumps.—Kerr Turbine Company, Wellsville, N. Y. Bulletin No. 52. Size, 6 x 9 in.; pages, 24. Describes and illustrates steam turbine driven pumps for water supply, boiler feed, fire service, circulating cooling water and water in heating systems, draining mines, etc. The illustrations not only include various types of outfits with statements of the capacities, but views of installations and drawings showing the construction of the turbine.

Nails.—Youngstown Sheet & Tube Company, Youngstown, Ohio. Pamphlet and folder. The first illustrates and describes by means of size tables the various wire nails and other wire products of the company. A number of views of the plant in which these products are made are presented, together with tables of weights and sizes of plain wire. The folder refers to a line of cement coated nails and consists entirely of illustrations of the different nails with tables of the sizes in which they can be supplied.

Steel Balls.—Hoover Steel Ball Company, Ann Arbor, Mich. Pamphlet. Devoted to a list of steel balls which are made from various grades and alloys and balls of brass, bronze, bell metal and aluminum. The different sizes of each material that can be supplied are given with the prices. Tables of weights of balls, decimal equivalents and allowable overloads are given, together with data and formulæ for calculating the size of a bearing.

Grinding and Polishing Machines.—F. E. Wells & Son Company, Greenfield, Mass. Circular. Illustrates and gives a general description of new models equipped with ball bearings and designed for an entirely inclosed underdrive. An illustrated article on one of these machines appeared in *The Iron Age*, January 14, 1915.

Chains.—Diamond Chain & Mfg. Company, 225 West Georgia street, Indianapolis, Ind. Folder. Calls attention to the use of Diamond chains for ammunition hoists and in other places where rapid continuous service is required.

Nut Lock.—Schum Brothers, Metropolitan Tower, New York City. Folder. Gives a general explanation of a device which automatically locks the nut to the bolt by the turning of a set screw, throwing the threads out of alignment. An illustrated description of the device appeared in *The Iron Age*, May 7, 1914.

Electrical Tools.—United States Electrical Tool Company, Cincinnati, Ohio. Catalogue No. 12. Size, 6 x 9 in.; pages, 71. Electrically driven tools for a variety of purposes are illustrated and described including portable hand and breast air-cooled motor drills for either metal or wood work up to 1¼-in. capacity, combination hand and bench drills, bench and radial drilling machines up to 1¼-in. capacity in metal, screw drivers; portable internal, bench and center grinding machines; grinding and buffing outfits, portable tire pumps etc. These tools are made with either direct or alternating current motors and operate from the ordinary lamp socket. Advice on the care of electric tools is included.

Gearing.—Dodge Mfg. Company, Mishawaka, Ind. Catalogue. Size, 6 x 9 in.; pages, 125. Covers a complete list of standard sizes of cast-iron spur, bevel and mitre gears, spur mortise gears, bevel and mitre gears in pairs, friction gearing and accessories and standard keyways. Tables giving the horsepower ratings of gears and working fiber and tooth strength factors are included.

Forging Machines.—National Machine Company, Tiffin, Ohio. Forging machine talk No. 7. Discusses suitable protection to movable grip dies so that the failure of operator to place stock in the groove of the die will not result in injury to the machine. The action of the spring relief which operates through a by-pass toggle is explained, and illustrations of this device in use are included.

Belt Shifting Pole.—Ready Tool Company, Bridgeport, Conn. Circular. Presents an illustration and brief description of an improved form of belt shifting pole that was illustrated in *The Iron Age*, February 11, 1915. The special feature of the pole is the use of a swivel fork with three rollers that come in contact with the belt that is being thrown. It is emphasized that this arrangement gives a tendency for the belt to slide on the pulley and for the pole to slide away, thus overcoming the possibility of accidents.

Disk Grinding Machinery.—Charles H. Besly & Co., 122 North Clinton street, Chicago, Ill. Circular. Presents illustrations of disk grinding machines in operation in a number of large manufacturing plants. These serve to give some idea of the wide scope of application and the character of the work done by these machines.

Draft Attachment and Journal Boxes.—T. H. Symington Company, Rochester, N. Y. Catalogues B, CS and CE. The first is concerned with the Farlow draft attachment, the fundamental idea of which is to absorb buffing shocks in excess of draft gear capacity by transmitting shocks to several points on the car sills in direct line with their plane of greatest resistance. Catalogue CS describes a semi-steel dust-proof journal box for steam railroad service while CE covers journal boxes with torsion-spring and pivot lids for electric railroad service.

Shaping Machines.—Gould & Eberhardt, Newark, N. J. Catalogue. Covers a line of high-duty shaping machines and the attachments that are furnished. After an illustrated description of the parts of these machines, illustrations with descriptions on the facing pages are given of the 14, 16, 20 and 24 in. machines. The 28-in. machine is discussed in detail, and the engravings include a cross-section diagram to show interior construction. A number of arrangements of electric motor and single-pulley drive are shown. The different attachments which can be furnished are illustrated and briefly described, and a discussion of the shaping machine as a manufacturing tool is given, together with illustrations of operations performed by this company's machines.

Fire Fighting Apparatus.—Waterous Engine Works Company, St. Paul, Minn. Two catalogues and booklets. The first describes and illustrates motor-driven apparatus consisting of pumping engines, hose wagons, combination pumping engine and hose wagon, chemical engines, combinations of these types and gasoline fire engines for hand or horse draft. The second takes up a line of fire hydrants and waterworks equipment, such as pipe, valves, etc. The booklets illustrate a line of hand hose carts suitable for factory use.

Turntables.—E. J. Woodison Company, 1200 Niagara street, Buffalo, N. Y. Circular. Describes the Universal ball bearing turntable, the special feature of which is a serpentine ball track, in which there is a high spot at the center and another at the edge of the table. Views of the different types of tables which can be supplied either with or without track are presented, together with lists of the sizes in which they can be furnished.

Lathe Turrets.—Fay & Scott, Dexter, Maine. Catalogue. Shows an extensive line of lathe turrets that have been brought out for use on tools ranging from 12 to 38-in. swings. In addition to the regular carriage turret mention is also made of bed turrets designed for application to standard engine lathes of the same swings as the carriage type. Besides brief illustrated descriptions of the various types of turrets, attention is called to the diameter stops that can be supplied for any type of carriage turret. Views of the turret with the various parts numbered are included as well as drawings showing their construction and the points to be observed in ordering.

Barometric Condensers.—Cresson-Morris Company, Philadelphia, Pa. Form No. 1001. Concerned with the use of barometric jet condensers in steam plants, the advantages of which are high vacuum at the exhaust of the prime mover, ability to vary the amount of cooling water in direct ratio to the load of the prime mover without impairing the vacuum, the securing of an operating vacuum under all conditions, low operating cost and the fact that dirty, gritty or acid cooling water can be used without necessitating shutdowns for cleaning or repair. After discussing the fundamental principles of the condensation of the steam and the design of this type of condenser, a description of the arrangement and operation of the Beyer counter-current condenser is presented, the text being supplemented by line drawings and halftone engravings of installations. Mention is also made of the Ingersoll-Rogler dry air pump used in connection with these condensers, and illustrations of the various types of pump are presented. The report of a test on a plant equipped with one of these condensers, and a list of some of the places in which it is installed are included, the latter giving in addition to the name of the user, the duty in pounds of steam per hour and the type of prime mover at the plant.

Portable Keyseating Machine.—John T. Burr & Son, 429 Kent avenue, Brooklyn, N. Y. Pamphlet. Covers briefly the principal constructional features and use of a portable shaft keyseating machine equipped with an electric motor drive. The machine is intended to be clamped on the shaft that is to be machined without removing it from the hangers or the boxes. Keyseats up to a maximum length of 12 in. can be milled either in the ends or middle of shafting having a maximum diameter of 5 in. Views of the machine in use, together with a condensed specification table are included. An illustrated description of this machine appeared in *The Iron Age*, January 21, 1915.

Automatic Nut Tapping Machines.—Robert J. Rodd, Cuyahoga Falls, Ohio. Pamphlet. Describes a line of machinery for automatically tapping hot or cold pressed nuts ranging from 3/32 to ¾ in. Illustrations of the various sizes of machines are presented, with brief statements as to their capacity, and a general description of the construction of the machines and a table of the capacity, output and floor space required are included. Four of the machines are driven by an endless belt, while the two largest ones have a gear drive.

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